Intel Corporation

WSBUB-SDS

FCC 22.913:2014

FCC 24.232:2014

FCC 27.50:2014

Report #: INTE5452

Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: August 24, 2014
Intel Corporation
Model: WSBUB-SDS

Emissions

Test Description	Specification	Test Method	Pass/Fail
ERP PART 22H - 2G/3G	FCC 22.913:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP PART 24E - 2G/3G	FCC 24.232:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP PART 27 - 3G	FCC 27.50:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP Part 24E – LTE BAND 2	FCC 24.232:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP Part 27 – LTE BAND 4	FCC 27.50:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP Part 22H – LTE BAND 5	FCC 22.913:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP Part 27 – LTE BAND 7	FCC 27.50:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP Part 27 – LTE BAND 13	FCC 27.50:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass
EIRP Part 27 – LTE BAND 17	FCC 27.50:2014, FCC 2.1053:2014	ANSI/TIA/EIA-603-C-2004	Pass

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

REVISION HISTORY

REV 2012.08.02

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

NORTHWEST EMC

REV 2012.05.24

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Hong Kong

OFTA – Recognized by OFTA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

MEASUREMENT UNCERTAINTY

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is listed below. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

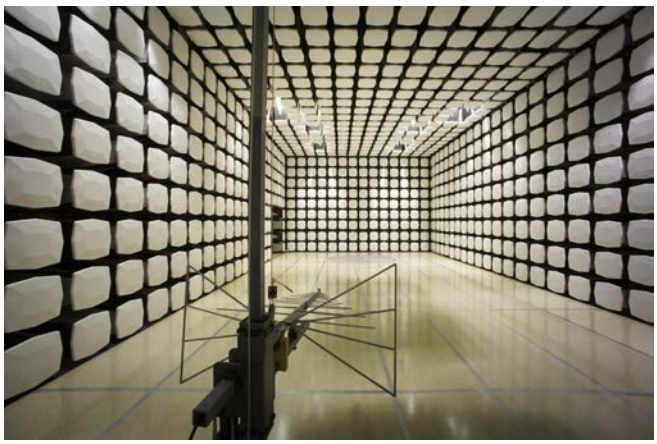
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94

NORTHWEST EMC

REV 2013.06.28

FACILITIES

Oregon	California	New York	Minnesota	Washington
Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Labs NC01-05,SU02,SU07 19201 120th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-*2*	2834B-1, 2834B-2, 2834B-3		2834E-1	2834F-1
NVLAP				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0



PRODUCT DESCRIPTION

WTD 12.5.23

Client and Equipment Under Test (EUT) Information

Company Name:	Intel Corporation
Address:	5200 NE Elam Young Pkwy
City, State, Zip:	Hillsboro, OR 91724
Test Requested By:	Mike Lowe
Model:	WSBUB-SDS
First Date of Test:	May 14, 2014
Last Date of Test:	August 24, 2014
Receipt Date of Samples:	March 31, 2014
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

Laptop/Tablet Convertible that contains WWAN, WLAN, Bluetooth, and NFC radios. A proximity sensor is co-located with the WWAN transmit antenna. Once the sensor is triggered, the output power is lowered for all WWAN bands.

Testing Objective:

To demonstrate compliance of the WWAN radio to the radiated power requirements of FCC 22H, 24E, and 27 at the normal full (high) power level, and at the low (triggered) power level. Separate test reports address compliance for spurious radiated emissions and the antenna port direct connect measurements.

CONFIGURATIONS

Configuration INTE5452- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop/Tablet Convertible	Intel Corporation	WSBUB-SDS	FZWC41000010

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adaptor	Delta Electronics	ADP-45BE AA	N/A
Headphones	Apple	None	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	0.5m	No	AC Mains	AC/DC Adaptor
DC Power	No	1.5m	PA	AC/DC Adaptor	Laptop/Tablet Convertible
USB	Yes	1.5m	PA	Laptop/Tablet Convertible	Unterminated
USB	No	1.8m	No	Laptop/Tablet Convertible	Unterminated
HDMI	Yes	1.5m	No	Laptop/Tablet Convertible	Unterminated
Ethernet	No	1.5m	No	Laptop/Tablet Convertible	Unterminated
Headphones	No	1.1m	No	Laptop/Tablet Convertible	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration INTE5452- 3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop/Tablet Convertible	Intel Corporation	WSBUB-SDS	FZWC41000007

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adaptor	Delta Electronics	ADP-45BE AA	N/A
Headphones	Apple	None	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	0.5m	No	AC Mains	AC/DC Adaptor
DC Power	No	1.5m	PA	AC/DC Adaptor	Laptop/Tablet Convertible
USB	Yes	1.5m	PA	Laptop/Tablet Convertible	Unterminated
USB	No	1.8m	No	Laptop/Tablet Convertible	Unterminated
HDMI	Yes	1.5m	No	Laptop/Tablet Convertible	Unterminated
Ethernet	No	1.5m	No	Laptop/Tablet Convertible	Unterminated
Headphones	No	1.1m	No	Laptop/Tablet Convertible	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration INTE5478- 1

Software/Firmware Running during test	
Description	**Version**
Windows	8.1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop/Tablet Convertible	Intel Corporation	WSBUB-SDS	FZWC41000237

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Adapter	Delta Electronics	ADP-45BEAA	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Headphones	No	1.29m	No	Laptop/Tablet Convertible	Un Terminated
HDMI	No	1.55m	No	Laptop/Tablet Convertible	Un Terminated
Ethernet	No	1.04m	No	Laptop/Tablet Convertible	Un Terminated
USB Cable	No	1.02m	No	Laptop/Tablet Convertible	Un Terminated
USB Cable	No	1m	No	Laptop/Tablet Convertible	Un Terminated
AC Power	No	0.5m	No	AC Mains	AC Adapter
DC Power	No	1.5m	Unknown	AC Adapter	Laptop/Tablet Convertible
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/14/2014	Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	8/24/2014	Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

ERP PART 22H - 2G/3G - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting WCDMA R99, Band V, 12.2 k.
Transmitting Cell Band 850 E-GPRS (EDGE), MCS-9 , Slot setting 1 up and 1 down.
Transmitting Cell Band 850 GPRS, CS-4 , Slot setting 1 up and 1 down.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency	824 MHz	Stop Frequency	849 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Antenna, Dipole	EMCO	3121C-DB4	ADTD	4/3/2014	36 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/2/2013	12
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

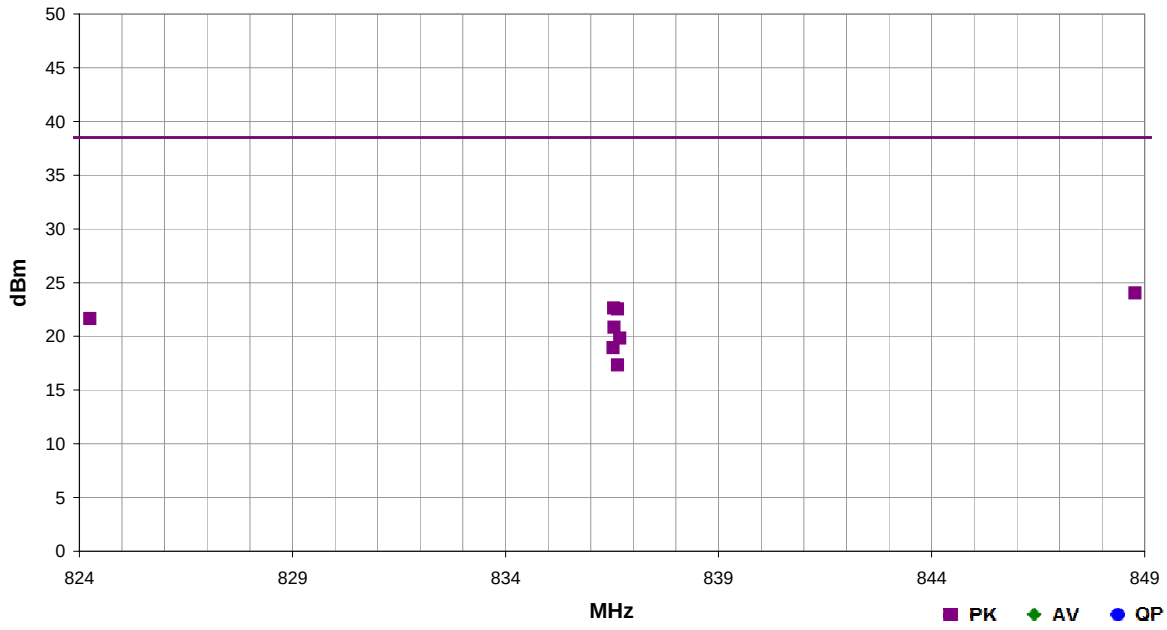
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

ERP PART 22H - 2G/3G - LOW POWER

Work Order:	INTE5452	**Date:**	05/20/14		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV01	**Humidity:**	45.8% RH		
Serial Number:	FZWC41000007	**Barometric Pres.:**	1012 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Transmittifiguration:	3				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Cell Band 850 GPRS, CS-4 , Slot setting 1 up and 1 down. See comments for channel, and frequency .				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 22.913:2014	ANSI/TIA/EIA-603-C-2004

Run #	19	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



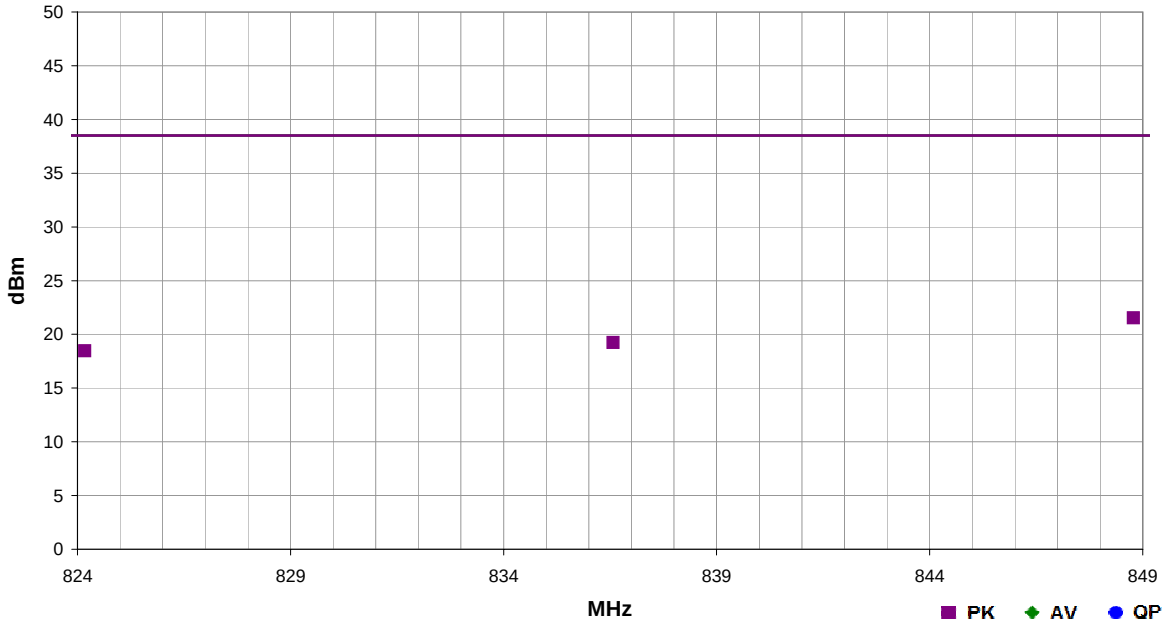
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	848.775	2.1	45.0	Vert	PK	2.54E-01	24.0	38.5	-14.5	High Ch. 251, 848.8MHz, EUT On Side
	836.545	1.5	70.0	Vert	PK	1.84E-01	22.6	38.5	-15.9	Mid Ch. 190, 836.6MHz, EUT On Side
	836.630	2.2	326.0	Horz	PK	1.79E-01	22.5	38.5	-16.0	Mid Ch. 190, 836.6MHz, EUT Horz
	824.245	1.9	242.0	Vert	PK	1.47E-01	21.7	38.5	-16.8	Low Ch. 128, 824.6MHz, EUT On Side
	836.550	1.8	117.0	Horz	PK	1.21E-01	20.8	38.5	-17.7	Mid Ch. 190, 836.6MHz, EUT Vert
	836.685	1.0	226.0	Horz	PK	9.64E-02	19.8	38.5	-18.7	Mid Ch. 190, 836.6MHz, EUT On Side
	836.530	1.0	296.0	Vert	PK	7.83E-02	18.9	38.5	-19.6	Mid Ch. 190, 836.6MHz, EUT Vert
	836.630	1.1	5.0	Vert	PK	5.42E-02	17.3	38.5	-21.2	Mid Ch. 190, 836.6MHz, EUT Horz

ERP PART 22H - 2G/3G - LOW POWER

Work Order:	INTE5452	**Date:**	05/20/14		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV01	**Humidity:**	45.8% RH		
Serial Number:	FZWC41000007	**Barometric Pres.:**	1012 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Transmittifiguration:	3				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Cell Band 850 E-GPRS, MCS-9 , Slot setting 1 up and 1 down. See comments for channel, and frequency .				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 22.913:2014	ANSI/TIA/EIA-603-C-2004

Run #	20	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



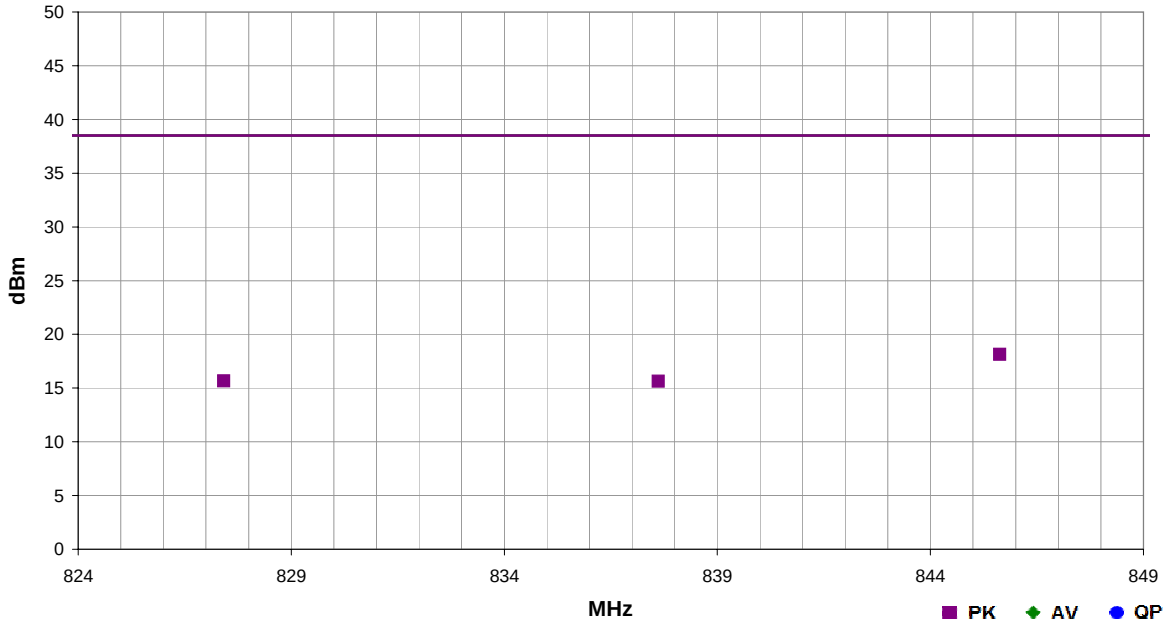
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	848.780	2.2	50.0	Vert	PK	1.43E-01	21.5	38.5	-17.0	High Ch. 251, 848.8MHz, EUT On Side
	836.570	2.3	41.0	Vert	PK	8.39E-02	19.2	38.5	-19.3	Mid Ch. 190, 836.6MHz, EUT On Side
	824.170	2.2	41.0	Vert	PK	7.01E-02	18.5	38.5	-20.0	Low Ch. 128, 824.6MHz, EUT On Side

ERP PART 22H - 2G/3G - LOW POWER

Work Order:	INTE5452	**Date:**	05/20/14		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV01	**Humidity:**	45.8% RH		
Serial Number:	FZWC41000007	**Barometric Pres.:**	1012 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Transmittifiguration:	3				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting WCDMA R99, Band V, 12.2 k. See comments for channel, and frequency.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 22.913:2014	ANSI/TIA/EIA-603-C-2004

Run #	21	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	845.625	2.1	40.0	Vert	PK	6.50E-02	18.1	38.5	-20.4	High Ch. 4233, 846.6MHz, EUT On Side
	827.417	1.9	240.0	Vert	PK	3.69E-02	15.7	38.5	-22.8	Low Ch. 4312, 826.5MHz, EUT On Side
	837.615	2.3	46.0	Vert	PK	3.66E-02	15.6	38.5	-22.9	Mid Ch. 4183, 836.6MHz, EUT On Side

EIRP PART 24E - 2G/3G - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting GPRS, PCS 1900, CS-4, 1UP/1DN.
Transmitting E-GPRS, PCS 1900, MCS-9, 1UP/1DN.
Transmitting WCDMA R99, Band II, 12.2 k.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency	1850 MHz	Stop Frequency	1910 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHC	6/20/2012	24 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	2/18/2014	12 mo
Antenna, Horn	ETS	3115	AIZ	1/27/2014	36 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

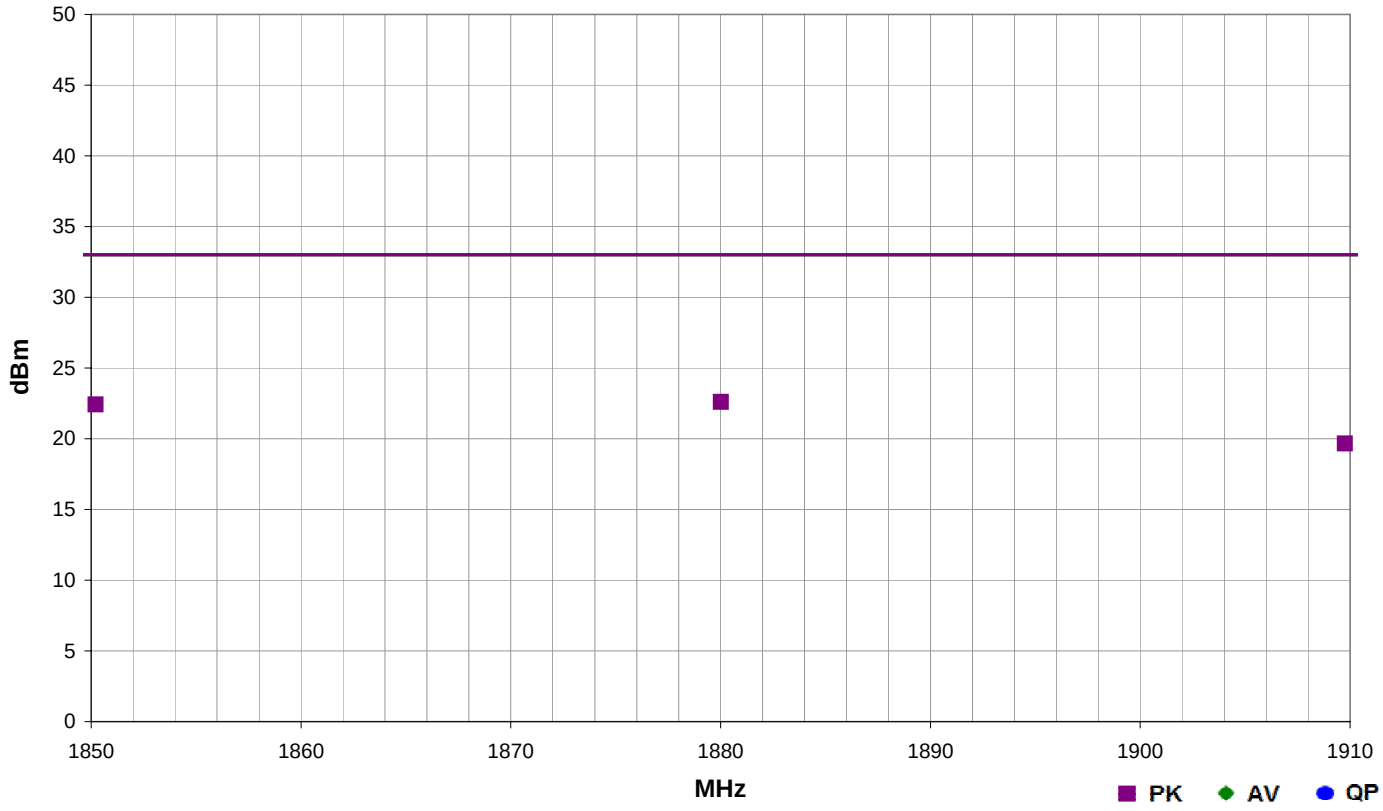
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 24E - 2G/3G - LOW POWER

Work Order:	INTE5452	**Date:**	05/21/14		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV01	**Humidity:**	45.6% RH		
Serial Number:	FZWC41000007	**Barometric Pres.:**	1012 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	3				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting GPRS, PCS 1900, CS-4, 1UP/1DN. See comments for channel, and frequency.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	24	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



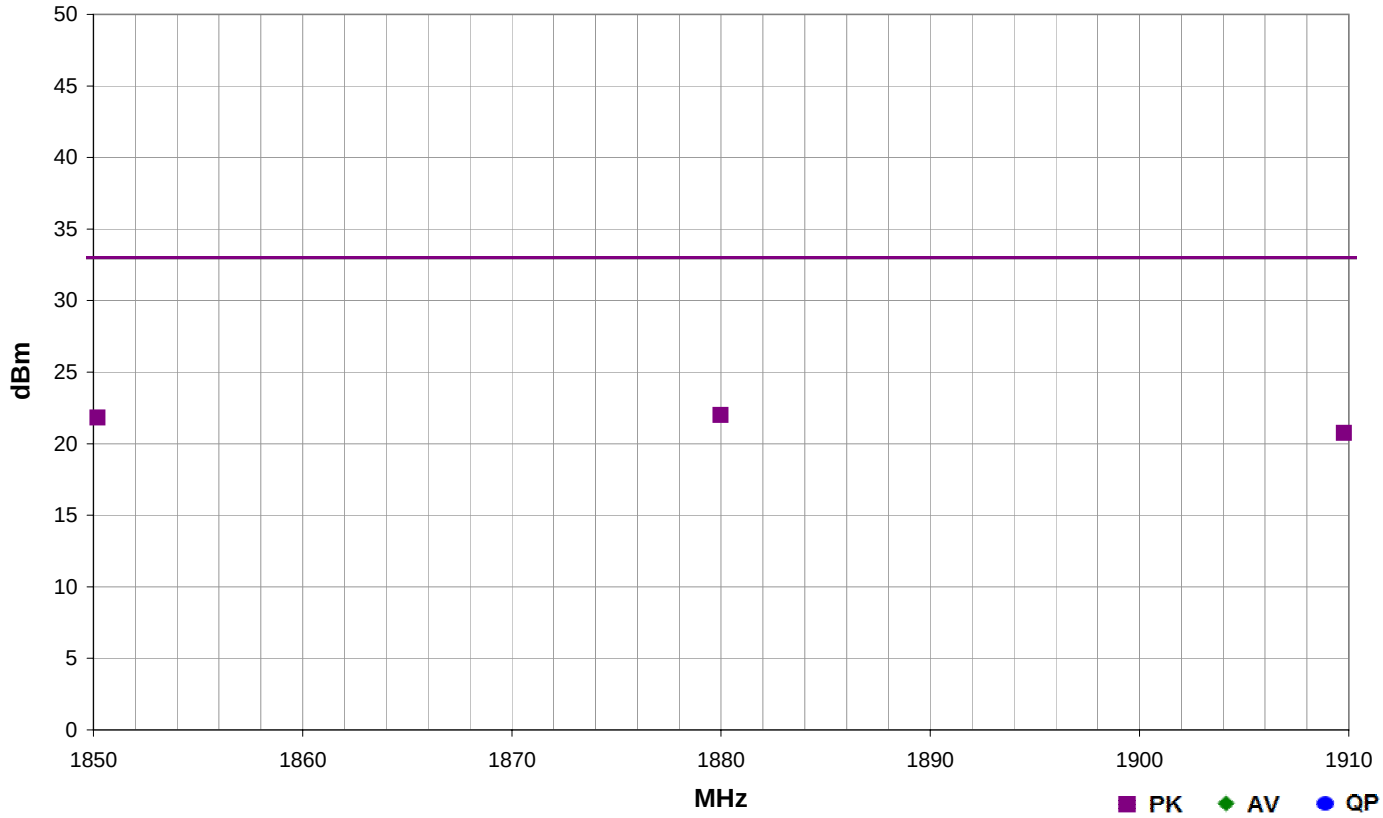
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1880.017	2.9	213.0	Vert	PK	1.82E-01	22.6	33.0	-10.4	Mid Ch. 661, 1880MHz, EUT Horz
	1850.215	2.4	225.0	Vert	PK	1.75E-01	22.4	33.0	-10.6	Low Ch. 512, 1850.2MHz, EUT Horz
	1909.750	1.0	20.0	Vert	PK	9.25E-02	19.7	33.0	-13.3	High Ch. 810, 1909.8MHz, EUT Horz

EIRP PART 24E - 2G/3G - LOW POWER

Work Order:	INTE5452	**Date:**	05/21/14		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV01	**Humidity:**	45.6% RH		
Serial Number:	FZWC41000007	**Barometric Pres.:**	1012 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	3				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting E-GPRS, PCS 1900, MCS-9, 1UP/1DN. See comments for channel, and frequency.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	23	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



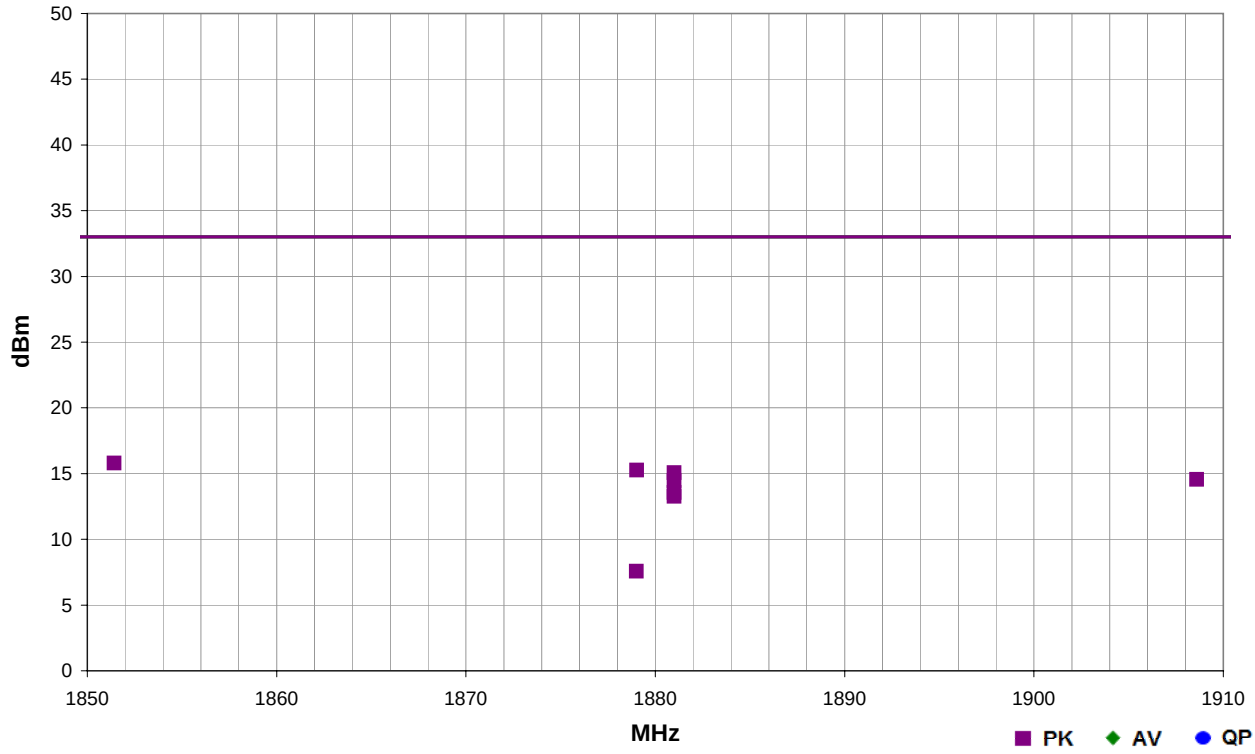
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1879.983	2.9	217.0	Vert	PK	1.59E-01	22.0	33.0	-11.0	Mid Ch. 661, 1880MHz, EUT Horz
	1850.200	2.4	227.0	Vert	PK	1.52E-01	21.8	33.0	-11.2	Low Ch. 512, 1850.2MHz, EUT Horz
	1909.775	2.9	232.0	Vert	PK	1.19E-01	20.8	33.0	-12.2	High Ch. 810, 1909.8MHz, EUT Horz

EIRP PART 24E - 2G/3G - LOW POWER

Work Order:	INTE5452	**Date:**	05/21/14		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV01	**Humidity:**	45.6% RH		
Serial Number:	FZWC41000007	**Barometric Pres.:**	1012 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	3				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting WCDMA R99, Band II, 12.2 k. See comments for channel, and frequency.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	22	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1851.417	3.1	283.0	Vert	PK	3.80E-02	15.8	33.0	-17.2	Low Ch. 9262, 1852.4MHz, EUT Horz
	1879.017	2.9	212.0	Vert	PK	3.36E-02	15.3	33.0	-17.7	Mid Ch. 9400, 1880MHz, EUT Horz
	1880.992	1.4	107.0	Horz	PK	3.21E-02	15.1	33.0	-17.9	Mid Ch. 9400, 1880MHz, EUT On Side
	1908.600	2.5	271.0	Vert	PK	2.85E-02	14.6	33.0	-18.4	High Ch. 9538, 1907.6MHz, EUT Horz
	1880.992	1.0	38.0	Vert	PK	2.79E-02	14.5	33.0	-18.5	Mid Ch. 9400, 1880MHz, EUT Vert
	1880.992	1.0	285.0	Horz	PK	2.27E-02	13.6	33.0	-19.4	Mid Ch. 9400, 1880MHz, EUT Vert
	1880.992	1.4	328.0	Horz	PK	2.12E-02	13.3	33.0	-19.7	Mid Ch. 9400, 1880MHz, EUT Horz
	1879.000	1.0	151.0	Vert	PK	5.70E-03	7.6	33.0	-25.4	Mid Ch. 9400, 1880MHz, EUT On Side

EIRP PART 27 - 3G - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting WCDMA, AWS 1700, 12.2k. See comments for channel, and frequency.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency	1710 MHz	Stop Frequency	1755 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHC	6/20/2012	24 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/18/2014	12 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Antenna, Horn	ETS	3115	AIZ	1/27/2014	36 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

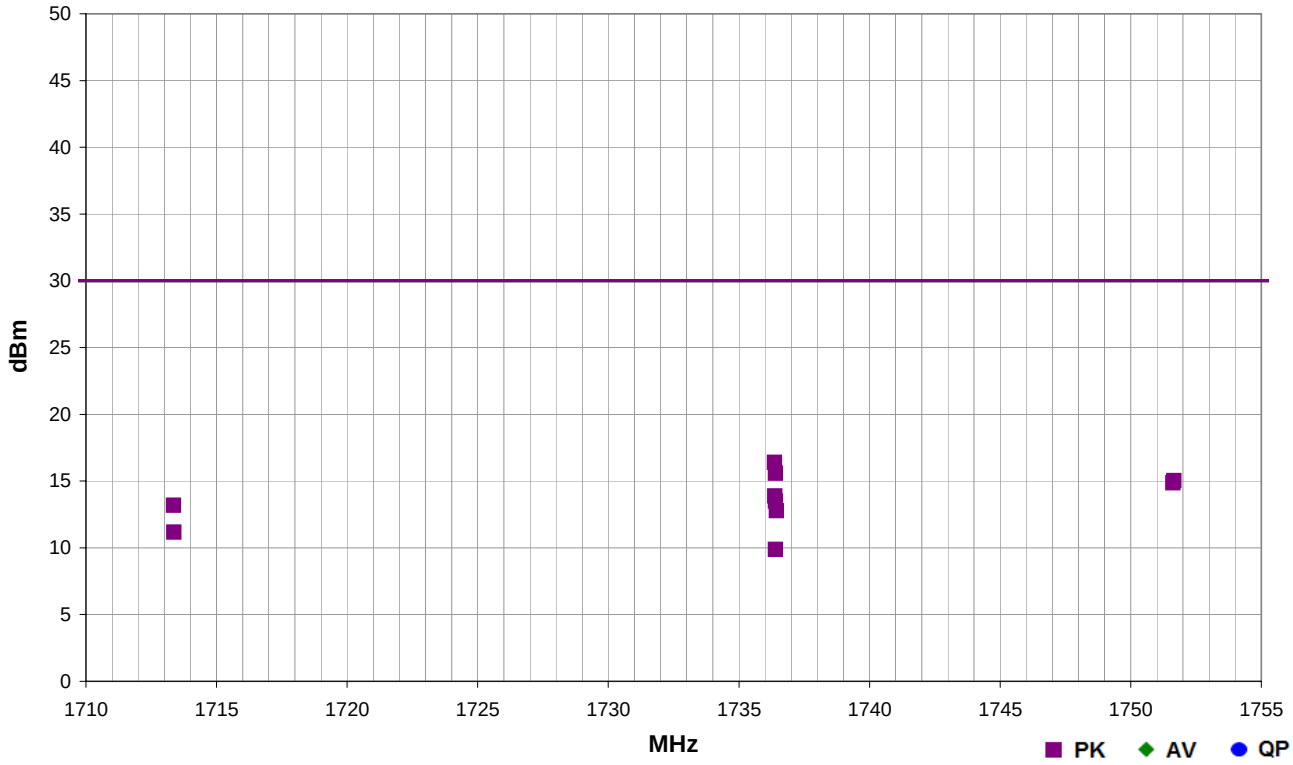
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 27 - 3G - LOW POWER

Work Order:	INTE5452	**Date:**	05/22/14		
Project:	None	**Temperature:**	22.5 °C		
Job Site:	EV01	**Humidity:**	45.8% RH		
Serial Number:	FZWC41000007	**Barometric Pres.:**	1017 mbar	**Tested by:**	Brandon Hobbs
EUT:	WSBUB-SDS				
Configuration:	3				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting WCDMA, AWS 1700, 12.2k. See comments for channel, and frequency.				
Deviations:					
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	25	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1736.370	2.7	263.0	Vert	PK	4.36E-02	16.4	30.0	-15.8	Mid Ch. 1427, 1735.4MHz, EUT Horz
	1736.400	2.3	31.0	Vert	PK	3.62E-02	15.6	30.0	-16.6	Mid Ch. 1427, 1735.4MHz, EUT On Side
	1751.660	1.0	31.0	Horz	PK	3.18E-02	15.0	30.0	-17.1	High Ch. 1513, 1752.6MHz, EUT Vert
	1751.620	1.8	225.0	Vert	PK	3.05E-02	14.9	30.0	-17.3	High Ch. 1513, 1752.6MHz, EUT Horz
	1736.380	1.3	183.0	Horz	PK	2.44E-02	13.9	30.0	-18.3	Mid Ch. 1427, 1735.4MHz, EUT Vert
	1736.400	1.0	308.0	Vert	PK	2.23E-02	13.5	30.0	-18.7	Mid Ch. 1427, 1735.4MHz, EUT Vert
	1713.360	1.0	33.0	Horz	PK	2.08E-02	13.2	30.0	-19.0	Low Ch. 1312, 1712.4MHz, EUT Vert
	1736.440	1.2	285.0	Horz	PK	1.90E-02	12.8	30.0	-19.4	Mid Ch. 1427, 1735.4MHz, EUT Horz
	1713.370	1.4	291.0	Vert	PK	1.31E-02	11.2	30.0	-21.0	Low Ch. 1312, 1712.4MHz, EUT Horz
	1736.400	1.2	265.0	Horz	PK	9.73E-03	9.9	30.0	-22.3	Mid Ch. 1427, 1735.4MHz, EUT On Side

EIRP PART 24E - LTE BAND 2 - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE band 2

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	1850 MHz	Stop Frequency	1910 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHC	6/20/2012	24 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	2/18/2014	12 mo
Antenna, Horn	ETS	3115	AIZ	1/27/2014	36 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

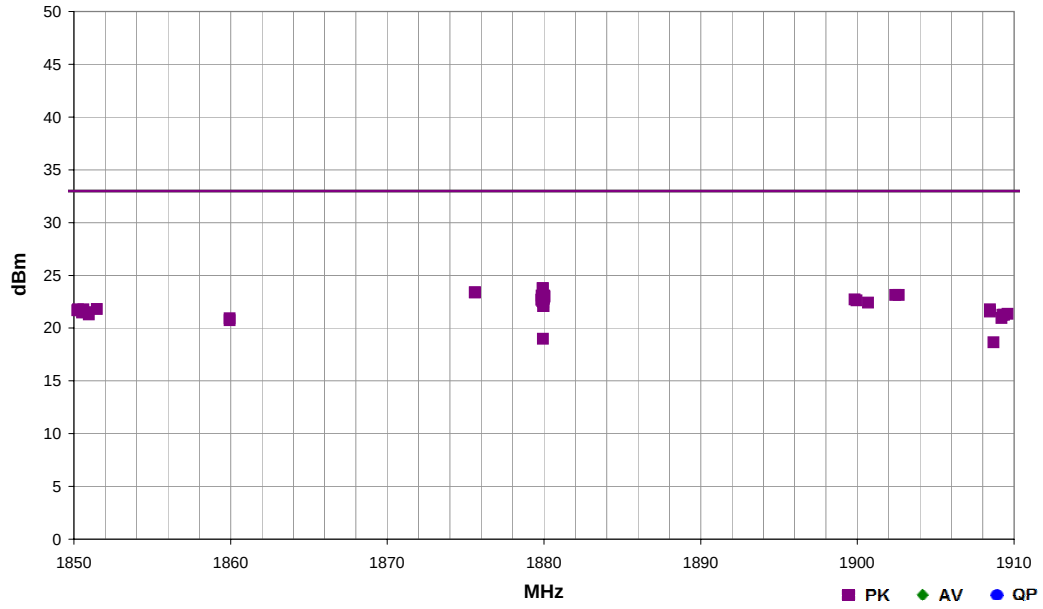
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 24E - LTE BAND 2 - LOW POWER

Work Order:	INTE5452	**Date:**	05/14/14		
Project:	None	**Temperature:**	23.7 °C		
Job Site:	EV01	**Humidity:**	38.9% RH		
Serial Number:	FZWC41000010	**Barometric Pres.:**	1022 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	2				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE band 2, see comments for channel, frequency and resource blocks.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	7	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1879.925	1.2	96.0	Horz	PK	2.38E-01	23.8	33.0	-9.2	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1879.933	1.2	15.0	Vert	PK	2.39E-01	23.8	33.0	-9.2	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1875.608	1.0	83.0	Horz	PK	2.17E-01	23.4	33.0	-9.6	Mid Ch. 18900, 1880MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1875.583	1.0	83.0	Horz	PK	2.17E-01	23.4	33.0	-9.6	Mid Ch. 18900, 1880MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1880.025	1.0	84.0	Horz	PK	2.03E-01	23.1	33.0	-9.9	Mid Ch. 18900, 1880MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT On Side
	1879.858	1.0	84.0	Horz	PK	2.03E-01	23.1	33.0	-9.9	Mid Ch. 18900, 1880MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT On Side
	1902.640	1.0	90.0	Horz	PK	2.06E-01	23.1	33.0	-9.9	High Ch. 19125, 1902.5MHz,16-QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT On Side
	1902.420	1.0	90.0	Horz	PK	2.06E-01	23.1	33.0	-9.9	High Ch. 19125, 1902.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT On Side
	1880.050	1.0	89.0	Horz	PK	1.98E-01	23.0	33.0	-10.0	Mid Ch. 18900, 1880MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side
	1880.017	1.0	85.0	Horz	PK	1.98E-01	23.0	33.0	-10.0	Mid Ch. 18900, 1880MHz, 16-QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT On Side
	1879.900	1.0	84.0	Horz	PK	1.94E-01	22.9	33.0	-10.1	Mid Ch. 18900, 1880MHz, 16-QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT On Side
	1880.008	1.0	89.0	Horz	PK	1.89E-01	22.8	33.0	-10.2	Mid Ch. 18900, 1880MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side
	1879.950	1.0	85.0	Horz	PK	1.89E-01	22.8	33.0	-10.2	Mid Ch. 18900, 1880MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT On Side
	1879.833	1.0	84.0	Horz	PK	1.85E-01	22.7	33.0	-10.3	Mid Ch. 18900, 1880MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT On Side
	1899.820	1.0	90.0	Horz	PK	1.87E-01	22.7	33.0	-10.3	High Ch. 19100, 1900MHz,16-QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT On Side
	1879.892	1.4	150.0	Horz	PK	1.81E-01	22.6	33.0	-10.4	Mid Ch. 18900, 1880MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1899.960	1.0	90.0	Horz	PK	1.83E-01	22.6	33.0	-10.4	High Ch. 19100, 1900MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT On Side
	1879.950	1.1	62.0	Horz	PK	1.77E-01	22.5	33.0	-10.5	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1900.680	1.0	92.0	Horz	PK	1.75E-01	22.4	33.0	-10.6	High Ch. 19150, 1905MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1879.983	3.1	256.0	Vert	PK	1.61E-01	22.1	33.0	-10.9	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1879.950	1.0	270.0	Horz	PK	1.61E-01	22.1	33.0	-10.9	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1851.467	1.0	92.0	Horz	PK	1.51E-01	21.8	33.0	-11.2	Low Ch. 18615, 1851.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT On Side
	1850.608	1.0	88.0	Horz	PK	1.51E-01	21.8	33.0	-11.2	Low Ch. 18607, 1850.7MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1850.267	1.0	92.0	Horz	PK	1.51E-01	21.8	33.0	-11.2	Low Ch. 18615, 1851.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1908.470	1.0	90.0	Horz	PK	1.50E-01	21.8	33.0	-11.2	High Ch. 19185, 1908.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT On Side
	1850.592	1.0	88.0	Horz	PK	1.47E-01	21.7	33.0	-11.3	Low Ch. 18607, 1850.7MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1850.365	1.0	92.0	Horz	PK	1.47E-01	21.7	33.0	-11.3	Low Ch. 18625, 1852.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1850.220	1.0	92.0	Horz	PK	1.47E-01	21.7	33.0	-11.3	Low Ch. 18625, 1852.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1850.570	1.0	90.0	Horz	PK	1.44E-01	21.6	33.0	-11.4	Low Ch. 18650, 1855MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1908.460	1.0	90.0	Horz	PK	1.43E-01	21.6	33.0	-11.4	High Ch. 19185, 1908.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT On Side
	1850.800	1.0	89.0	Horz	PK	1.41E-01	21.5	33.0	-11.5	Low Ch. 18675, 1857.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 0, EUT On Side

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1850.530	1.0	90.0	Horz	PK	1.41E-01	21.5	33.0	-11.5	Low Ch. 18650, 1855MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1909.585	1.0	94.0	Horz	PK	1.37E-01	21.4	33.0	-11.6	High Ch. 19195, 1907.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side
	1850.955	1.0	89.0	Horz	PK	1.35E-01	21.3	33.0	-11.7	Low Ch. 18675, 1857.5MHz, 16-QAM, 15MHz BW, RB Size 1, RB Offset 0, EUT On Side
	1909.375	1.0	92.0	Horz	PK	1.34E-01	21.3	33.0	-11.7	High Ch. 19150, 1905MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT On Side
	1909.255	1.0	90.0	Horz	PK	1.34E-01	21.3	33.0	-11.7	High Ch. 19193, 1909.3MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1909.195	1.0	90.0	Horz	PK	1.25E-01	21.0	33.0	-12.0	High Ch. 19193, 1909.3MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1859.945	1.0	92.0	Horz	PK	1.24E-01	20.9	33.0	-12.1	Low Ch. 18700, 1860MHz, 16-QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT On Side
	1859.945	1.0	92.0	Horz	PK	1.18E-01	20.7	33.0	-12.3	Low Ch. 18700, 1860MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT On Side
	1879.933	1.2	300.0	Vert	PK	7.91E-02	19.0	33.0	-14.0	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1908.700	1.0	94.0	Horz	PK	7.35E-02	18.7	33.0	-14.3	High Ch. 19195, 1907.5MHz, QPSK, 5MHz BW, RB Size 12, RB Offset 6, EUT On Side

EIRP PART 27 - LTE BAND 4 - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE band 4, see comments for channel, frequency and resource blocks.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	1710 MHz	Stop Frequency	1755 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHC	6/20/2012	24 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/18/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Antenna, Horn	ETS	3115	AIZ	1/27/2014	36 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

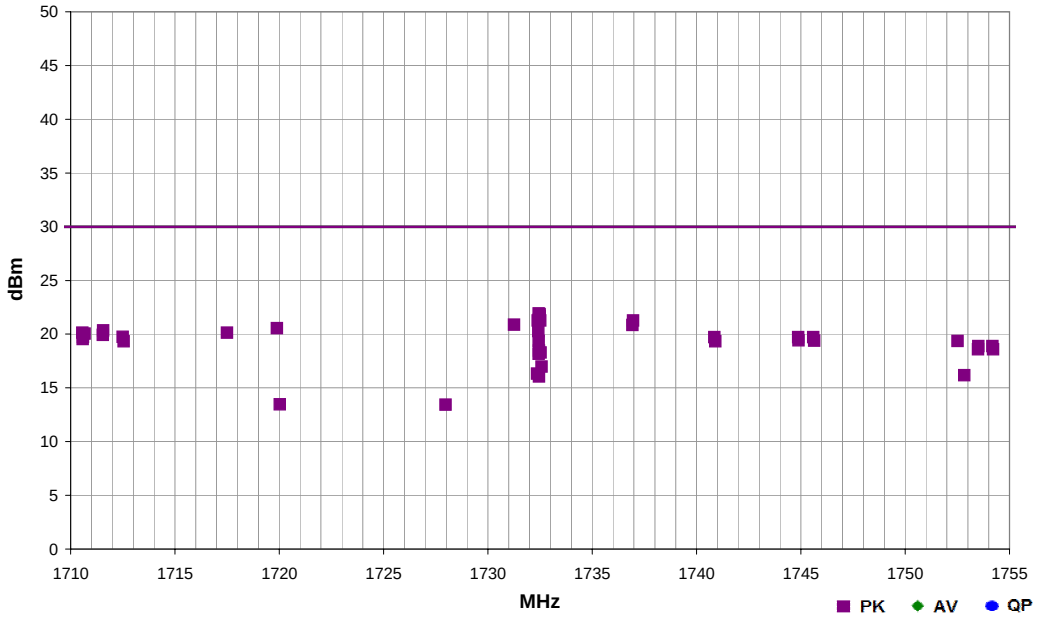
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 27 - LTE BAND 4 - LOW POWER

Work Order:	INTE5452	**Date:**	05/15/14		
Project:	None	**Temperature:**	22.4 °C		
Job Site:	EV01	**Humidity:**	46.2% RH		
Serial Number:	FZWC41000010	**Barometric Pres.:**	1017 mbar	**Tested by:**	Brandon Hobbs
EUT:	WSBUB-SDS				
Configuration:	2				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE band 4, see comments for channel, frequency and resource blocks.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	9	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1732.433	1.2	10.0	Horz	PK	1.56E-01	21.9	30.0	-8.1	Mid Ch. 20175, 1732.5MHz, 16-QAM 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1732.483	1.2	10.0	Horz	PK	1.54E-01	21.9	30.0	-8.1	Mid Ch. 20175, 1732.5MHz, 16-QAM 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	1732.483	1.2	10.0	Horz	PK	1.47E-01	21.7	30.0	-8.3	Mid Ch. 20175, 1732.5MHz, 16-QAM 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	1732.458	1.2	10.0	Horz	PK	1.37E-01	21.4	30.0	-8.6	Mid Ch. 20175, 1732.5MHz, QPSK 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1732.508	1.2	10.0	Horz	PK	1.34E-01	21.3	30.0	-8.7	Mid Ch. 20175, 1732.5MHz, QPSK 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	1732.400	1.2	10.0	Horz	PK	1.34E-01	21.3	30.0	-8.7	Mid Ch. 20175, 1732.5MHz, 16-QAM 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1736.958	1.2	10.0	Horz	PK	1.33E-01	21.3	30.0	-8.8	Mid Ch. 20175, 1732.5MHz, 16-QAM 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1736.933	1.2	10.0	Horz	PK	1.22E-01	20.9	30.0	-9.1	Mid Ch. 20175, 1732.5MHz, QPSK 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1731.265	1.2	10.0	Horz	PK	1.22E-01	20.9	30.0	-9.1	Mid Ch. 20175, 1732.5MHz, 16-QAM 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1719.900	1.0	15.0	Horz	PK	1.14E-01	20.6	30.0	-9.5	Low Ch. 20050, 1720MHz, 16-QAM 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1732.425	1.2	10.0	Horz	PK	1.06E-01	20.3	30.0	-9.7	Mid Ch. 20175, 1732.5MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1711.558	1.0	16.0	Horz	PK	1.08E-01	20.3	30.0	-9.7	Low Ch. 19965, 1711.5MHz, 16-QAM 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1717.500	1.0	15.0	Horz	PK	1.03E-01	20.1	30.0	-9.9	Low Ch. 20025, 1717.5MHz, 16-QAM 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	1710.567	1.0	14.0	Horz	PK	1.03E-01	20.1	30.0	-9.9	Low Ch. 20000, 1715MHz, 16-QAM 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1710.675	1.0	14.0	Horz	PK	1.01E-01	20.0	30.0	-10.0	Low Ch. 19957, 1710.7MHz, 16-QAM 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1711.542	1.0	16.0	Horz	PK	9.84E-02	19.9	30.0	-10.1	Low Ch. 19965, 1711.5MHz, QPSK 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1744.883	1.0	297.0	Horz	PK	9.35E-02	19.7	30.0	-10.3	High Ch. 20300, 1745MHz, 16-QAM 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1740.858	1.0	297.0	Horz	PK	9.38E-02	19.7	30.0	-10.3	High Ch. 20325, 1747.5MHz, 16-QAM 15MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1745.592	1.0	297.0	Horz	PK	9.33E-02	19.7	30.0	-10.3	High Ch. 20350, 1750MHz, 16-QAM 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1712.500	1.0	17.0	Horz	PK	9.40E-02	19.7	30.0	-10.3	Low Ch. 19975, 1712.5MHz, 16-QAM 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	1710.592	1.0	14.0	Horz	PK	9.40E-02	19.7	30.0	-10.3	Low Ch. 19957, 1710.7MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1710.583	1.0	14.0	Horz	PK	8.97E-02	19.5	30.0	-10.5	Low Ch. 20000, 1715MHz, QPSK 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1744.892	1.0	297.0	Horz	PK	8.73E-02	19.4	30.0	-10.6	High Ch. 20300, 1745MHz, QPSK 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1752.508	1.0	292.0	Horz	PK	8.65E-02	19.4	30.0	-10.6	High Ch. 20375, 1752.5MHz, 16-QAM 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	1745.642	1.0	297.0	Horz	PK	8.69E-02	19.4	30.0	-10.6	High Ch. 20350, 1750MHz, QPSK 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1732.445	1.2	272.0	Vert	PK	8.63E-02	19.4	30.0	-10.6	Mid Ch. 20175, 1732.5MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1740.900	1.0	297.0	Horz	PK	8.55E-02	19.3	30.0	-10.7	High Ch. 20325, 1747.5MHz, QPSK 15MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1712.550	1.0	17.0	Horz	PK	8.59E-02	19.3	30.0	-10.7	Low Ch. 19975, 1712.5MHz, QPSK 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	1754.183	1.0	10.0	Horz	PK	7.71E-02	18.9	30.0	-11.1	High Ch. 20393, 1754.3MHz, 16-QAM 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1753.508	1.0	10.0	Horz	PK	7.71E-02	18.9	30.0	-11.1	High Ch. 20385, 1753.5MHz, 16-QAM 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1754.217	1.0	10.0	Horz	PK	7.19E-02	18.6	30.0	-11.4	High Ch. 20393, 1754.3MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1753.492	1.0	10.0	Horz	PK	7.19E-02	18.6	30.0	-11.4	High Ch. 20385, 1753.5MHz, QPSK 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1732.450	1.0	14.0	Vert	PK	7.01E-02	18.5	30.0	-11.5	Mid Ch. 20175, 1732.5MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1732.535	1.2	10.0	Horz	PK	6.71E-02	18.3	30.0	-11.7	Mid Ch. 20175, 1732.5MHz, QPSK 3MHz BW, RB Size 8, RB Offset 4, EUT Horz
	1732.435	1.2	19.0	Horz	PK	6.56E-02	18.2	30.0	-11.8	Mid Ch. 20175, 1732.5MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1732.583	1.2	10.0	Horz	PK	4.98E-02	17.0	30.0	-13.0	Mid Ch. 20175, 1732.5MHz, QPSK 5MHz BW, RB Size 12, RB Offset 11, EUT Horz
	1732.355	1.0	158.0	Horz	PK	4.30E-02	16.3	30.0	-13.7	Mid Ch. 20175, 1732.5MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1752.842	1.0	292.0	Horz	PK	4.15E-02	16.2	30.0	-13.8	High Ch. 20375, 1752.5MHz, QPSK 5MHz BW, RB Size 12, RB Offset 12, EUT Horz
	1732.460	2.9	206.0	Vert	PK	4.04E-02	16.1	30.0	-13.9	Mid Ch. 20175, 1732.5MHz, QPSK 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1727.983	1.0	15.0	Horz	PK	2.20E-02	13.4	30.0	-16.6	Low Ch. 20050, 1720MHz, QPSK 20MHz BW, RB Size 50, RB Offest 49, EUT Horz
	1720.033	1.0	15.0	Horz	PK	2.21E-02	13.5	30.0	-16.6	Low Ch. 20025, 1717.5MHz, QPSK 15MHz BW, RB Size 38, RB Offest 18, EUT Horz

ERP PART 22H - LTE BAND 5 - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE band 5

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	824 MHz	Stop Frequency	849 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
Antenna, Horn	EMCO	3115	AHC	6/20/2012	24 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

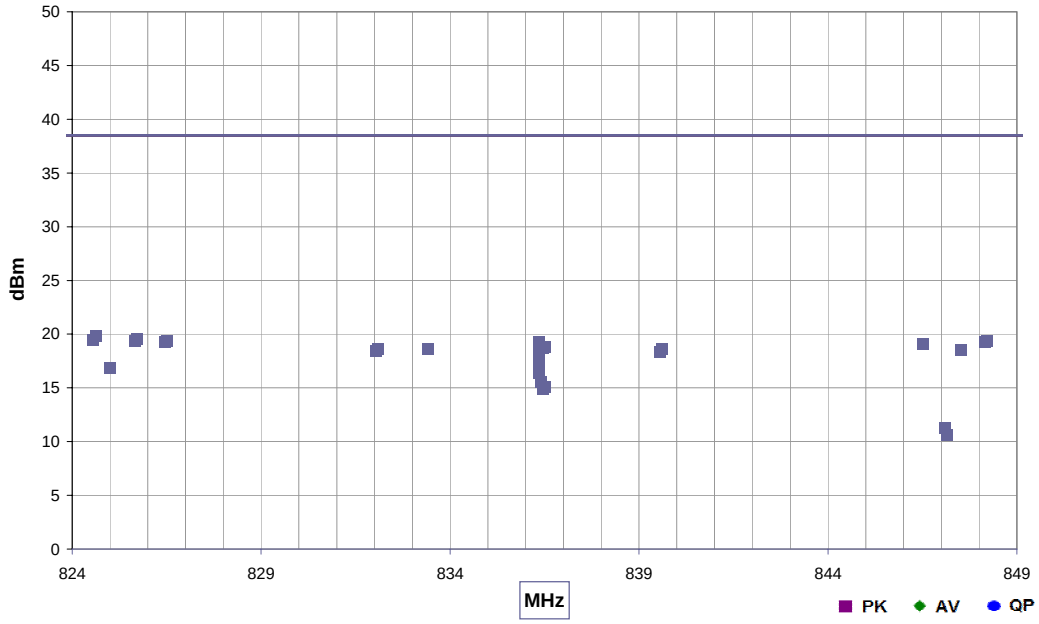
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

ERP PART 22H - LTE BAND 5 - LOW POWER

Work Order:	INTE5452	**Date:**	05/17/14		
Project:	None	**Temperature:**	22.6 °C		
Job Site:	EV01	**Humidity:**	45.2% RH		
Serial Number:	FZWC41000010	**Barometric Pres.:**	1011.2 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	2				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE band 5, see comments for channel, frequency and resource blocks.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 22.913:2014	ANSI/TIA/EIA-603-C-2004

Run #	11	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	824.617	1.5	41.0	Horz	PK	9.66E-02	19.9	38.5	-18.7	Low Ch. 20407, 824.7MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	825.708	1.5	39.0	Horz	PK	9.02E-02	19.6	38.5	-19.0	Low Ch. 20417, 825.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	824.545	1.5	42.0	Horz	PK	8.81E-02	19.5	38.5	-19.1	Low Ch. 20450, 829MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	848.218	1.4	39.0	Horz	PK	8.61E-02	19.4	38.5	-19.2	High Ch. 20643, 848.3MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	826.508	1.5	38.0	Horz	PK	8.61E-02	19.4	38.5	-19.2	Low Ch. 20425, 826.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	825.654	1.5	39.0	Horz	PK	8.61E-02	19.4	38.5	-19.2	Low Ch. 20417, 825.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	836.365	1.5	40.0	Horz	PK	8.47E-02	19.3	38.5	-19.2	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	826.454	1.5	38.0	Horz	PK	8.41E-02	19.3	38.5	-19.3	Low Ch. 20425, 826.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	848.165	1.4	39.0	Horz	PK	8.41E-02	19.3	38.5	-19.3	High Ch. 20643, 848.3MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	846.509	1.3	37.0	Horz	PK	8.04E-02	19.1	38.5	-19.5	High Ch. 20625, 846.5MHz, 16-QAM, 5MHz BW, RB Size 12, RB Offset 12, EUT Horz
	836.509	1.3	40.0	Horz	PK	7.55E-02	18.8	38.5	-19.7	Mid Ch. 20525, 836.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	836.455	1.3	40.0	Horz	PK	7.38E-02	18.7	38.5	-19.8	Mid Ch. 20525, 836.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	832.100	1.3	37.0	Horz	PK	7.19E-02	18.6	38.5	-19.9	Mid Ch. 20525, 836.5MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	833.417	1.5	42.0	Horz	PK	7.19E-02	18.6	38.5	-19.9	Low Ch. 20450, 829MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	839.601	1.3	37.0	Horz	PK	7.21E-02	18.6	38.5	-19.9	High Ch. 20600, 844MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	847.509	1.3	32.0	Horz	PK	7.16E-02	18.6	38.5	-20.0	High Ch. 20635, 847.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	832.046	1.3	37.0	Horz	PK	7.03E-02	18.5	38.5	-20.0	Mid Ch. 20525, 836.5MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	839.545	1.3	37.0	Horz	PK	6.89E-02	18.4	38.5	-20.1	High Ch. 20600, 844MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	836.365	2.0	282.0	Vert	PK	6.73E-02	18.3	38.5	-20.2	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	836.365	1.6	198.0	Horz	PK	5.47E-02	17.4	38.5	-21.1	Mid Ch. 20525, 836.5MHz,QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	824.987	1.5	41.0	Horz	PK	4.84E-02	16.9	38.5	-21.7	Low Ch. 20407, 824.7MHz, QPSK, 1.4MHz BW, RB Size 3, RB Offset 2, EUT Horz
	836.365	2.8	312.0	Horz	PK	4.66E-02	16.7	38.5	-21.8	Mid Ch. 20525, 836.5MHz,QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	836.365	1.5	172.0	Vert	PK	4.66E-02	16.7	38.5	-21.8	Mid Ch. 20525, 836.5MHz,QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	836.365	1.6	103.0	Vert	PK	4.35E-02	16.4	38.5	-22.1	Mid Ch. 20525, 836.5MHz,QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	836.418	1.5	174.0	Horz	PK	3.61E-02	15.6	38.5	-22.9	Mid Ch. 20525, 836.5MHz,16-QAM 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	836.509	1.5	170.0	Horz	PK	3.22E-02	15.1	38.5	-23.4	Mid Ch. 20525, 836.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	836.455	1.5	170.0	Horz	PK	3.08E-02	14.9	38.5	-23.6	Mid Ch. 20525, 836.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	847.102	1.3	32.0	Horz	PK	1.33E-02	11.3	38.5	-27.3	High Ch. 20635, 847.5MHz, QPSK, 3MHz BW, RB Size8, RB Offset 4, EUT Horz
	847.144	1.3	37.0	Horz	PK	1.16E-02	10.7	38.5	-27.9	High Ch. 20625, 846.5MHz, QPSK, 5MHz BW, RB Size 12, RB Offset 11, EUT Horz

EIRP PART 27 - LTE BAND 7 - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE band 7

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	2500 MHz	Stop Frequency	2570 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHC	6/20/2012	24 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	2/18/2014	12 mo
Antenna, Horn	ETS	3115	AIZ	1/27/2014	36 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

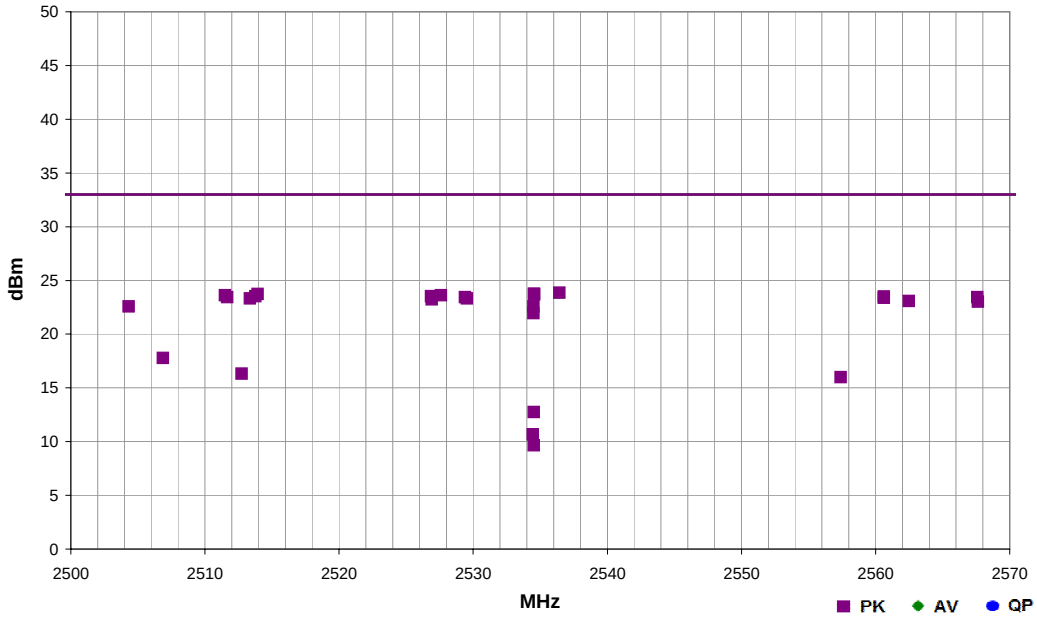
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 27 - LTE BAND 7 - LOW POWER

Work Order:	INTE5452	**Date:**	05/15/14		
Project:	None	**Temperature:**	24.2 °C		
Job Site:	EV01	**Humidity:**	44.7% RH		
Serial Number:	FZWC41000010	**Barometric Pres.:**	1015.3 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	2				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE band 4, see comments for channel, frequency and resource blocks.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	10	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	2536.435	1.0	313.0	Horz	PK	2.43E-01	23.9	33.0	-9.1	Mid Ch. 21070, 2532MHz, 16-QAM, 10MHz BW, RB Size1, RB Offset 49, EUT Horz
	2534.545	1.1	300.0	Horz	PK	2.38E-01	23.8	33.0	-9.2	Mid Ch. 21095, 2534.5MHz, 16-QAM, 5MHz BW, RB Size1, RB Offset 12, EUT Horz
	2534.540	1.1	300.0	Horz	PK	2.32E-01	23.7	33.0	-9.3	Mid Ch. 21095, 2534.5MHz, QPSK, 5MHz BW, RB Size1, RB Offset 12, EUT Horz
	2513.930	1.0	295.0	Horz	PK	2.36E-01	23.7	33.0	-9.3	Low Ch. 20890, 2514MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	2527.615	1.0	313.0	Horz	PK	2.31E-01	23.6	33.0	-9.4	Mid Ch. 21070, 2532MHz, QPSK, 10MHz BW, RB Size1, RB Offset 0, EUT Horz
	2511.500	1.0	301.0	Horz	PK	2.31E-01	23.6	33.0	-9.4	Low Ch. 20865, 2511.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	2560.615	1.0	287.0	Horz	PK	2.23E-01	23.5	33.0	-9.5	High Ch. 21400, 2565MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	2526.865	1.0	311.0	Horz	PK	2.25E-01	23.5	33.0	-9.5	Mid Ch. 21020, 2527MHz, 16-QAM, 20MHz BW, RB Size1, RB Offset 49, EUT Horz
	2513.765	1.0	295.0	Horz	PK	2.25E-01	23.5	33.0	-9.5	Low Ch. 20890, 2514MHz, 16-QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	2567.590	1.0	297.0	Horz	PK	2.20E-01	23.4	33.0	-9.6	High Ch. 21425, 2567.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	2560.615	1.0	287.0	Horz	PK	2.18E-01	23.4	33.0	-9.6	High Ch. 21400, 2565MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	2529.400	1.0	312.0	Horz	PK	2.20E-01	23.4	33.0	-9.6	Mid Ch. 21045, 2529.5MHz, 16-QAM, 15MHz BW, RB Size1, RB Offset 37, EUT Horz
	2511.665	1.0	301.0	Horz	PK	2.20E-01	23.4	33.0	-9.6	Low Ch. 20865, 2511.5MHz, 16-QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	2529.545	1.0	312.0	Horz	PK	2.15E-01	23.3	33.0	-9.7	Mid Ch. 21045, 2529.5MHz, QPSK, 15MHz BW, RB Size1, RB Offset 37, EUT Horz
	2513.365	1.0	295.0	Horz	PK	2.15E-01	23.3	33.0	-9.7	Low Ch. 20840, 2509MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	2526.910	1.0	311.0	Horz	PK	2.10E-01	23.2	33.0	-9.8	Mid Ch. 21020, 2527MHz, QPSK, 20MHz BW, RB Size1, RB Offset 49, EUT Horz
	2562.485	1.0	308.0	Horz	PK	2.04E-01	23.1	33.0	-9.9	High Ch. 21375, 2562.5MHz, 16-QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	2567.645	1.0	297.0	Horz	PK	2.01E-01	23.0	33.0	-10.0	High Ch. 21425, 2567.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	2504.310	1.0	310.0	Horz	PK	1.81E-01	22.6	33.0	-10.4	Low Ch. 20815, 2506.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Horz
	2534.500	1.2	285.0	Vert	PK	1.80E-01	22.6	33.0	-10.4	Mid Ch. 21095, 2534.5MHz, QPSK, 5MHz BW, RB Size1, RB Offset 12, EUT Vert
	2534.495	1.2	255.0	Horz	PK	1.57E-01	22.0	33.0	-11.0	Mid Ch. 21095, 2534.5MHz, QPSK, 5MHz BW, RB Size1, RB Offset 12, EUT Vert
	2506.867	1.0	310.0	Horz	PK	6.00E-02	17.8	33.0	-15.2	Low Ch. 20815, 2506.5MHz, 16-QAM, 5MHz BW, RB Size 12, RB Offset 6, EUT Horz
	2512.750	1.0	295.0	Horz	PK	4.30E-02	16.3	33.0	-16.7	Low Ch. 20840, 2509MHz, QPSK, 10MHz BW, RB Size 50, RB Offset 0, EUT Horz
	2557.405	1.0	308.0	Horz	PK	3.96E-02	16.0	33.0	-17.0	High Ch. 21375, 2562.5MHz, QPSK, 15MHz BW, RB Size 36, RB Offset 0, EUT Horz
	2534.515	3.3	146.0	Horz	PK	1.89E-02	12.8	33.0	-20.2	Mid Ch. 21095, 2534.5MHz, QPSK, 5MHz BW, RB Size1, RB Offset 12, EUT On Side
	2534.455	1.0	14.0	Vert	PK	1.16E-02	10.7	33.0	-22.4	Mid Ch. 21095, 2534.5MHz, QPSK, 5MHz BW, RB Size1, RB Offset 12, EUT On Side
	2534.530	1.2	314.0	Vert	PK	9.25E-03	9.7	33.0	-23.3	Mid Ch. 21095, 2534.5MHz, QPSK, 5MHz BW, RB Size1, RB Offset 12, EUT Horz

ERP PART 27 - LTE BAND 13 - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE Band 13

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	776 MHz	Stop Frequency	788 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
Antenna, Dipole	EMCO	3121C-DB4	ADTD	4/3/2014	36 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

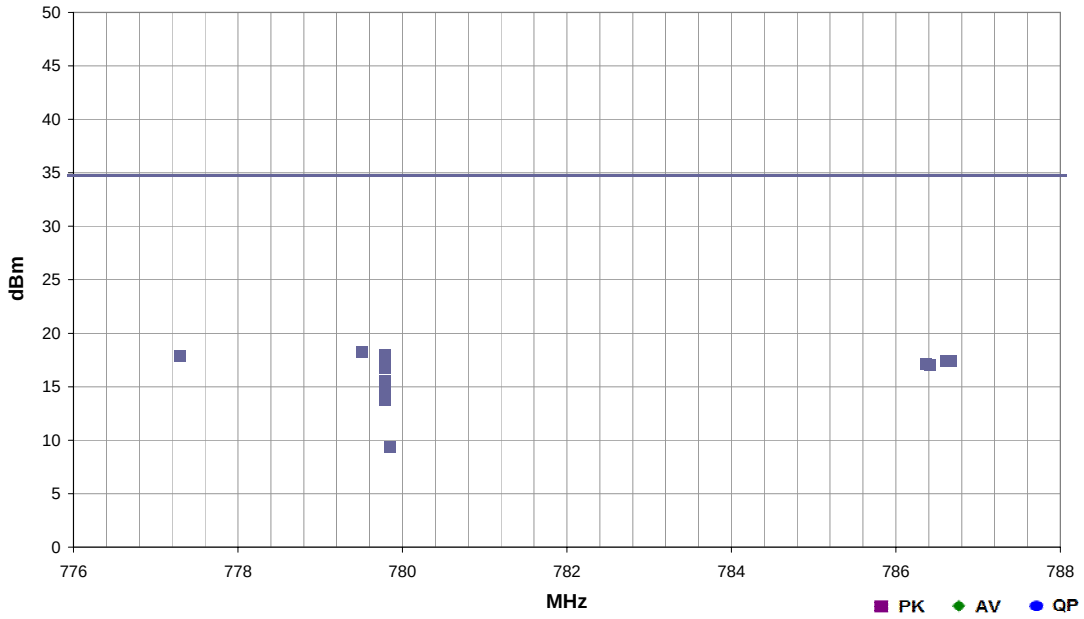
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined.

ERP PART 27 - LTE BAND 13 - LOW POWER

Work Order:	INTE5452	**Date:**	05/19/14		
Project:	None	**Temperature:**	22.5 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	FZWC41000010	**Barometric Pres.:**	1011 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	2				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE Band 13, see comments for channel, frequency and resource blocks.				
Deviations:	None				
Comments:	EUT in laptop configutaiton, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	15	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	779.510	1.8	264.0	Horz	PK	6.70E-02	18.3	34.8	-16.5	Low Ch. 23205, 779.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	779.794	1.8	261.0	Horz	PK	6.25E-02	18.0	34.8	-16.8	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	777.294	1.8	264.0	Horz	PK	6.11E-02	17.9	34.8	-16.9	Low Ch. 23205, 779.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	779.794	2.5	-1.0	Horz	PK	5.70E-02	17.6	34.8	-17.2	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Horz
	786.669	1.8	262.0	Horz	PK	5.55E-02	17.4	34.8	-17.3	High Ch. 23255, 784.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 24, EUT Vert
	786.615	1.8	262.0	Horz	PK	5.55E-02	17.4	34.8	-17.3	High Ch. 23255, 784.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 24, EUT Vert
	786.365	1.9	271.0	Horz	PK	5.18E-02	17.1	34.8	-17.6	Mid Ch. 23230, 782MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	786.417	1.9	271.0	Horz	PK	5.06E-02	17.0	34.8	-17.7	Mid Ch. 23230, 782MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	779.794	1.7	174.0	Horz	PK	4.74E-02	16.8	34.8	-18.0	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT On Side
	779.794	1.7	120.0	Vert	PK	3.60E-02	15.6	34.8	-19.2	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT On Side
	779.794	1.0	29.0	Vert	PK	2.99E-02	14.8	34.8	-20.0	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	779.794	1.0	287.0	Vert	PK	2.38E-02	13.8	34.8	-21.0	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Horz
	779.848	1.0	287.0	Horz	PK	8.63E-03	9.4	34.8	-25.4	Mid Ch. 23230, 782MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert

ERP PART 27 - LTE BAND 17 - LOW POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE band 17

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5452 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	704 MHz	Stop Frequency	716 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Antenna, Dipole	EMCO	3121C-DB4	ADTD	4/3/2014	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/2/2013	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

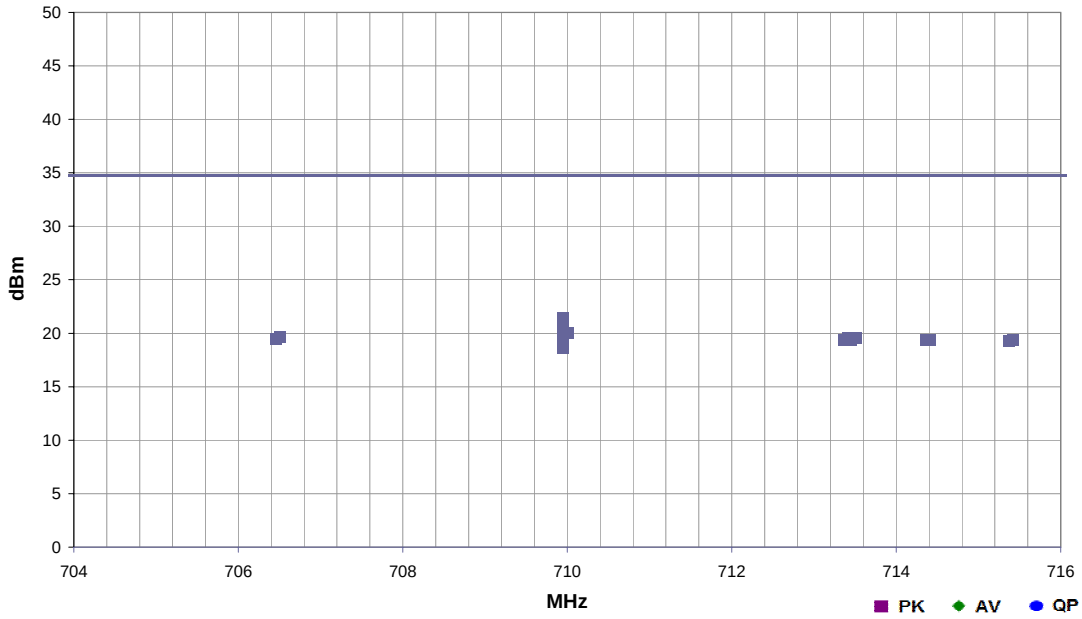
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined.

ERP PART 27 - LTE BAND 17 - LOW POWER

Work Order:	INTE5452	**Date:**	05/19/14		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	FZWC41000010	**Barometric Pres.:**	1011.5 mbar	**Tested by:**	Jared Ison
EUT:	WSBUB-SDS				
Configuration:	2				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE band 17, see comments for channel, frequency and resource blocks.				
Deviations:	None				
Comments:	EUT in laptop configuration, see comments for EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	13	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	709.954	1.0	324.0	Vert	PK	1.37E-01	21.4	34.8	-13.4	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	709.955	1.8	301.0	Horz	PK	1.28E-01	21.1	34.8	-13.7	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	709.954	1.9	166.0	Horz	PK	1.25E-01	21.0	34.8	-13.8	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	709.954	2.0	148.0	Vert	PK	1.07E-01	20.3	34.8	-14.5	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	710.008	1.0	238.0	Vert	PK	9.95E-02	20.0	34.8	-14.8	Mid Ch. 23790, 710MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	709.954	2.7	303.0	Vert	PK	9.51E-02	19.8	34.8	-15.0	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side
	706.508	1.0	228.0	Vert	PK	9.31E-02	19.7	34.8	-15.1	Low Ch. 23755, 706.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	713.509	1.0	234.0	Vert	PK	9.04E-02	19.6	34.8	-15.2	High Ch. 23825, 713.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	713.418	1.0	241.0	Vert	PK	9.04E-02	19.6	34.8	-15.2	Low Ch. 23780, 709MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	706.454	1.0	228.0	Vert	PK	8.89E-02	19.5	34.8	-15.3	Low Ch. 23755, 706.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	714.416	1.0	236.0	Vert	PK	8.63E-02	19.4	34.8	-15.4	Mid Ch. 23790, 710MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	715.417	1.0	234.0	Vert	PK	8.67E-02	19.4	34.8	-15.4	High Ch. 23800, 711MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	713.455	1.0	234.0	Vert	PK	8.63E-02	19.4	34.8	-15.4	High Ch. 23825, 713.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	713.366	1.0	241.0	Vert	PK	8.63E-02	19.4	34.8	-15.4	Low Ch. 23780, 709MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	714.366	1.0	236.0	Vert	PK	8.69E-02	19.4	34.8	-15.4	Mid Ch. 23790, 710MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	715.366	1.0	234.0	Vert	PK	8.47E-02	19.3	34.8	-15.5	High Ch. 23800, 711MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	709.954	1.0	109.0	Horz	PK	7.21E-02	18.6	34.8	-16.2	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side

ERP PART 22H - 2G/3G - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting WCDMA R99 12.2k
Transmitting EGPRS GSM850, MCSA-9,1up/1down
Transmitting GPRS GSM850, CS-4,1up/1down

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	824 MHz	Stop Frequency	849 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Antenna, Dipole	EMCO	3121C-DB4	ADTD	4/3/2014	36 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

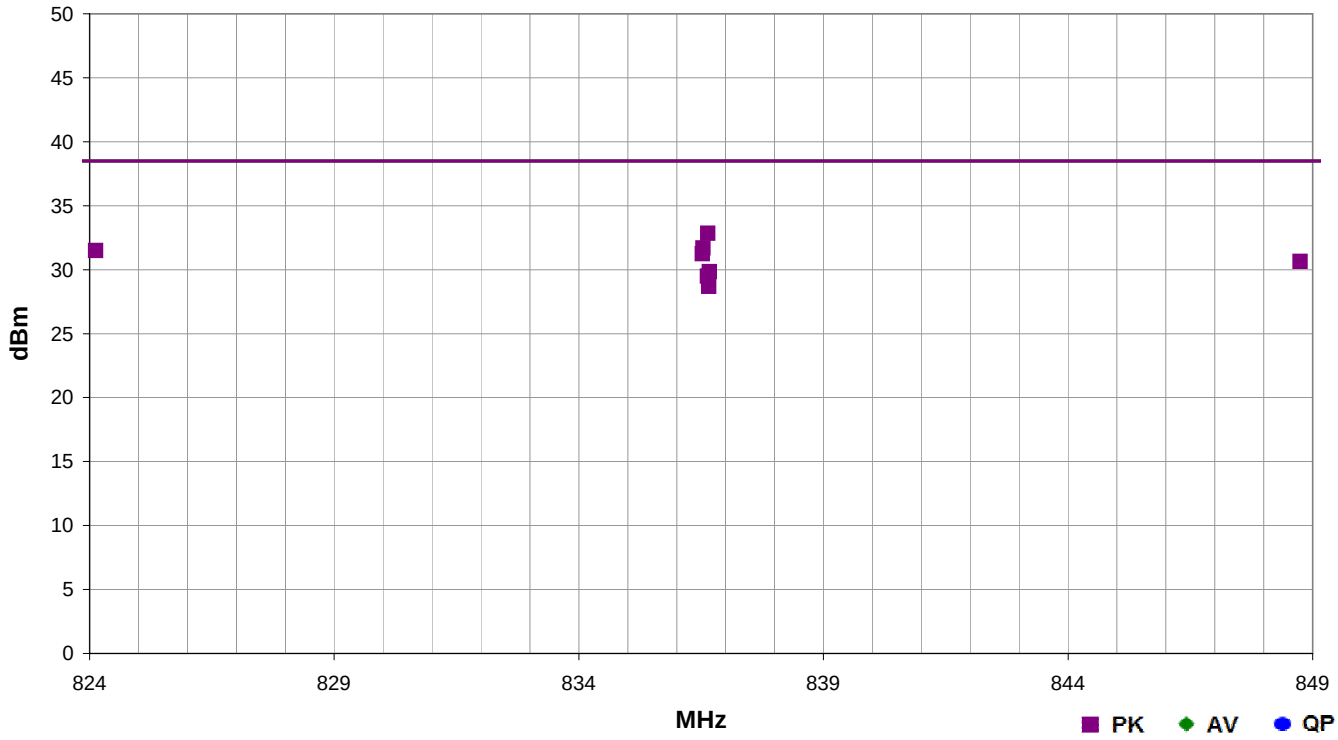
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

ERP PART 22H - 2G/3G - HIGH POWER

Work Order:	INTE5478	**Date:**	08/22/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV03	**Humidity:**	42.9% RH		
Serial Number:	None	**Barometric Pres.:**	1016.5 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx GPRS GSM850, CS-4,1up/1down				
Deviations:	None				
Comments:	Please reference the data comments for EUT orientation, frequency and channel.				

Test Specifications	**Test Method**
FCC 22.913:2012	ANSI/TIA/EIA-603-C-2004

Run #	7	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



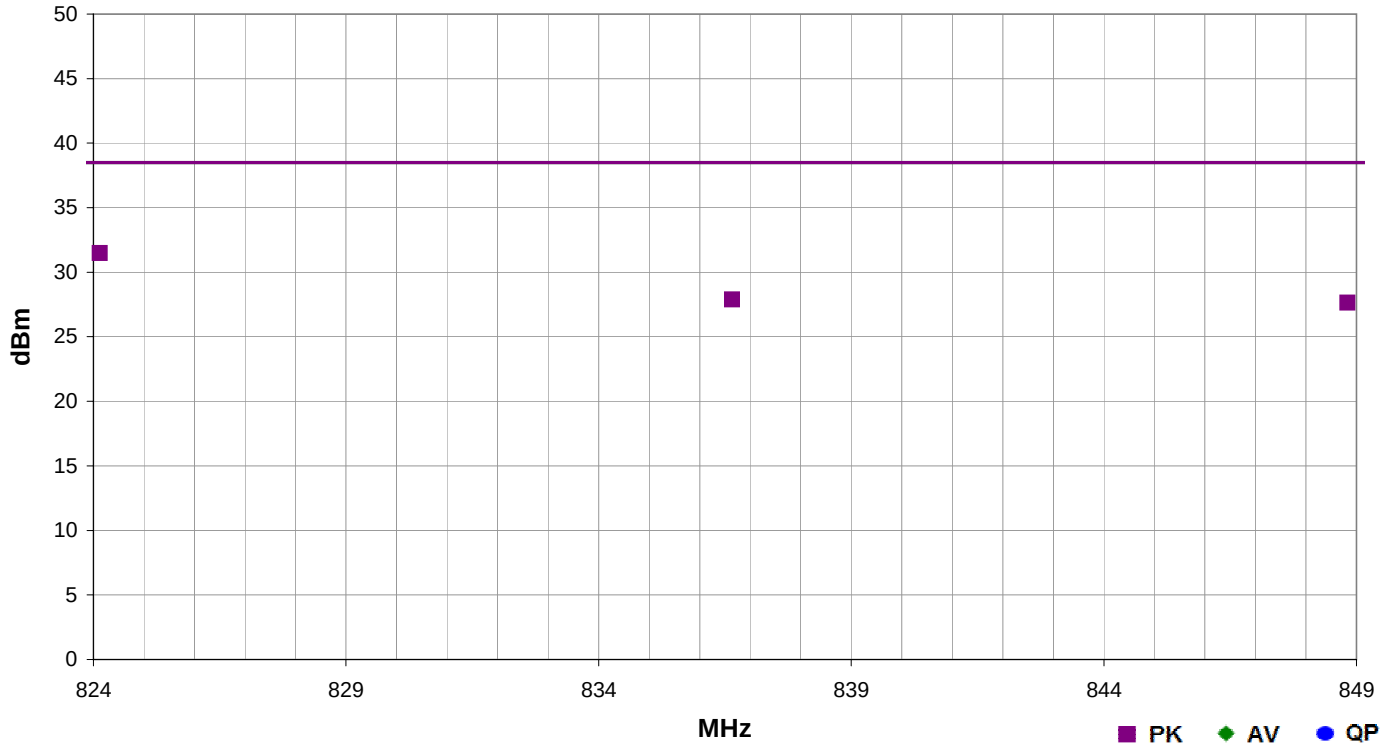
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	836.640	1.0	239.0	Vert	PK	1.92E+00	32.8	38.5	-5.7	Mid Ch. 190, 836.6MHz, EUT On Side
	836.540	1.6	286.0	Horz	PK	1.48E+00	31.7	38.5	-6.8	Mid Ch. 190, 836.6MHz, EUT Horz
	824.125	1.7	289.0	Horz	PK	1.41E+00	31.5	38.5	-7.0	Low Ch. 128, 824.2MHz, EUT Horz
	836.525	1.7	123.0	Vert	PK	1.33E+00	31.2	38.5	-7.3	Mid Ch. 190, 836.6MHz, EUT Vert
	848.745	1.0	249.0	Horz	PK	1.16E+00	30.6	38.5	-7.9	High Ch. 251, 848.8MHz, EUT Horz
	836.670	1.1	214.0	Vert	PK	9.64E-01	29.8	38.5	-8.7	Mid Ch. 190, 836.6MHz, EUT Horz
	836.630	1.8	311.0	Horz	PK	8.91E-01	29.5	38.5	-9.0	Mid Ch. 190, 836.6MHz, EUT Vert
	836.660	1.1	223.0	Horz	PK	7.41E-01	28.7	38.5	-9.8	Mid Ch. 190, 836.6MHz, EUT On Side

ERP PART 22H - 2G/3G - HIGH POWER

Work Order:	INTE5478	**Date:**	08/22/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV03	**Humidity:**	42.9% RH		
Serial Number:	None	**Barometric Pres.:**	1016.5 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx EGPRS GSM850, MCSA-9,1up/1down				
Deviations:	None				
Comments:	Please reference the data comments for EUT orientation, frequency and channel.				

Test Specifications	**Test Method**
FCC 22.913:2012	ANSI/TIA/EIA-603-C-2004

Run #	9	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



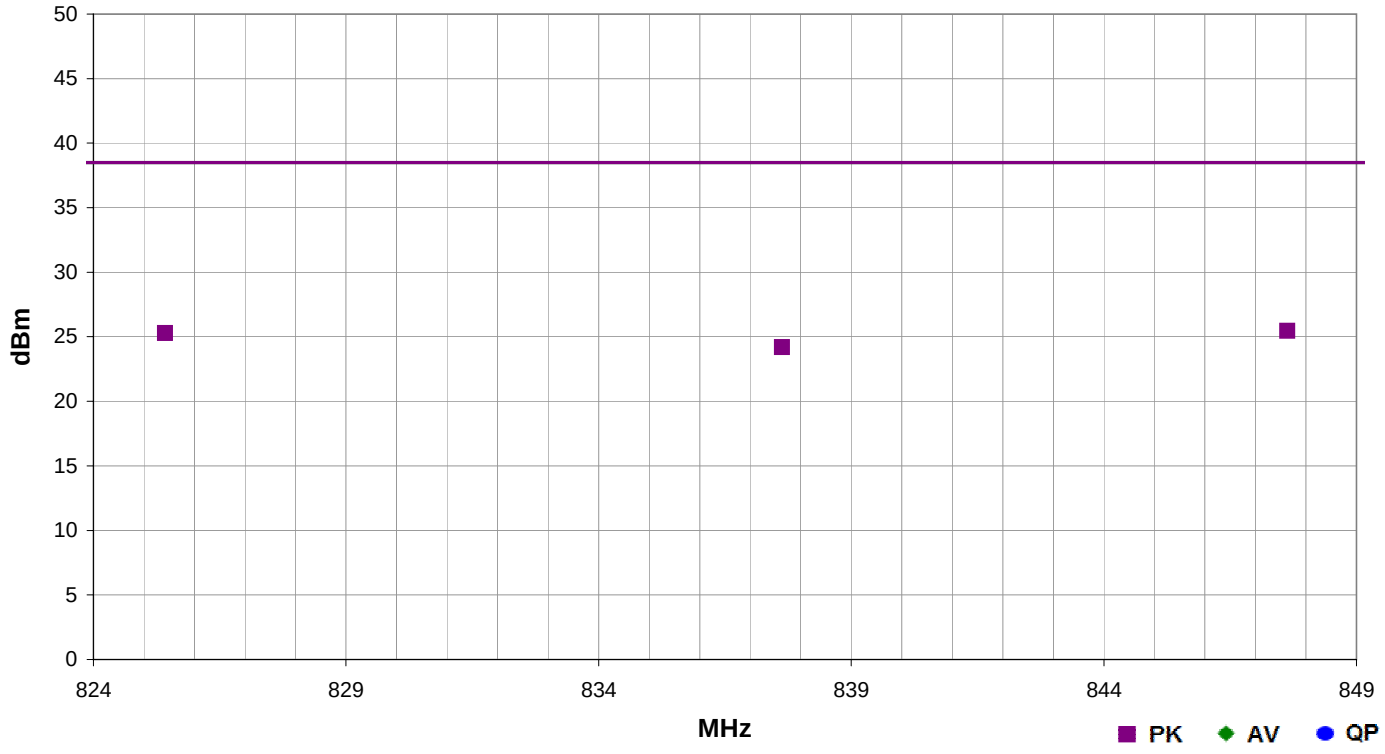
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	824.125	1.7	289.0	Horz	PK	1.41E+00	31.5	38.5	-7.0	Low Ch. 128, 824.2MHz, EUT Horz
	836.645	1.0	289.0	Horz	PK	6.17E-01	27.9	38.5	-10.6	Mid Ch. 190, 836.6MHz, EUT Horz
	848.820	1.0	250.0	Horz	PK	5.79E-01	27.6	38.5	-10.9	High Ch. 251, 848.8MHz, EUT Horz

ERP PART 22H - 2G/3G - HIGH POWER

Work Order:	INTE5478	**Date:**	08/22/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV03	**Humidity:**	42.9% RH		
Serial Number:	None	**Barometric Pres.:**	1016.5 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99 12.2k				
Deviations:	None				
Comments:	Please reference the data comments for EUT orientation, frequency and channel.				

Test Specifications	**Test Method**
FCC 22.913:2012	ANSI/TIA/EIA-603-C-2004

Run #	10	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	847.633	1.6	284.0	Horz	PK	3.52E-01	25.5	38.5	-13.0	High Ch. 4233, 846.6MHz, EUT Horz
	825.417	1.0	287.0	Horz	PK	3.38E-01	25.3	38.5	-13.2	Low Ch. 4132, 826.5MHz, EUT Horz
	837.633	1.0	284.0	Horz	PK	2.63E-01	24.2	38.5	-14.3	Mid Ch. 4182, 837MHz, EUT Horz

EIRP PART 24E - 2G/3G - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting WCDMA R99, Band II, 12.2k
Transmitting E-GPRS (EDGE) PCS1900 MCS-9, 1 up / 1 down
Transmitting GPRS PCS1900, CS-4, 1 up / 1 down

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	1850 MHz	Stop Frequency	1910 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2014	24 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	8/26/2014	12 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	8/26/2014	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

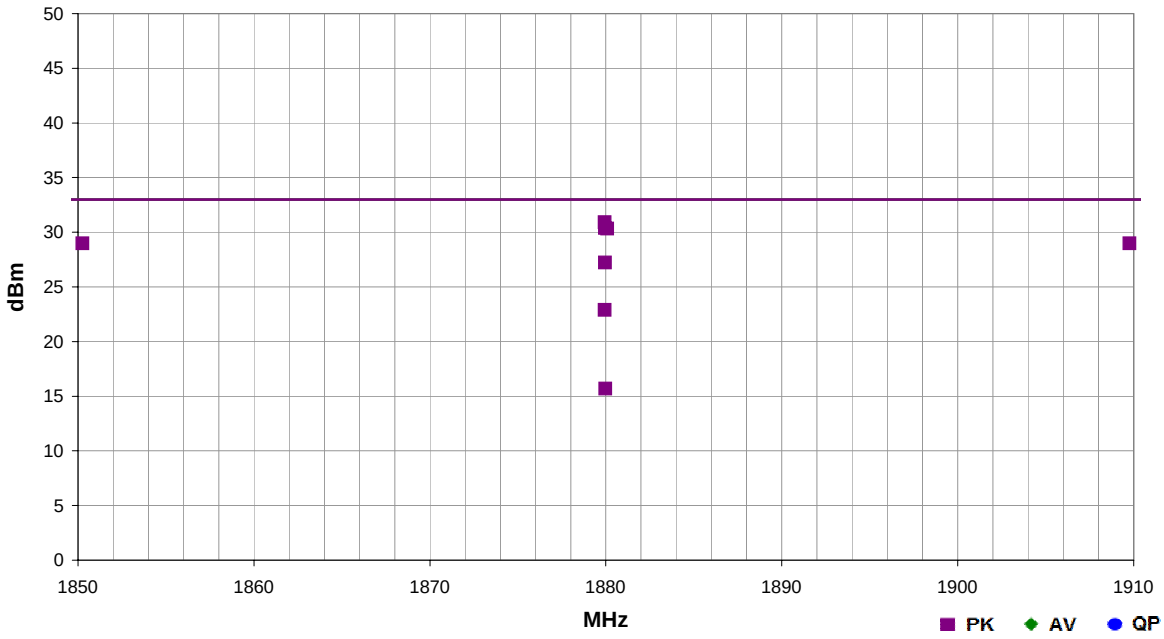
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 24E - 2G/3G - HIGH POWER

Work Order:	INTE5478	**Date:**	08/22/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV01	**Humidity:**	42.9% RH		
Serial Number:	None	**Barometric Pres.:**	1016.5 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx GPRS PCS1900 CS-4 1up/1down				
Deviations:	None				
Comments:	Please reference the data comments for EUT orientation, frequency and channel.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	11	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



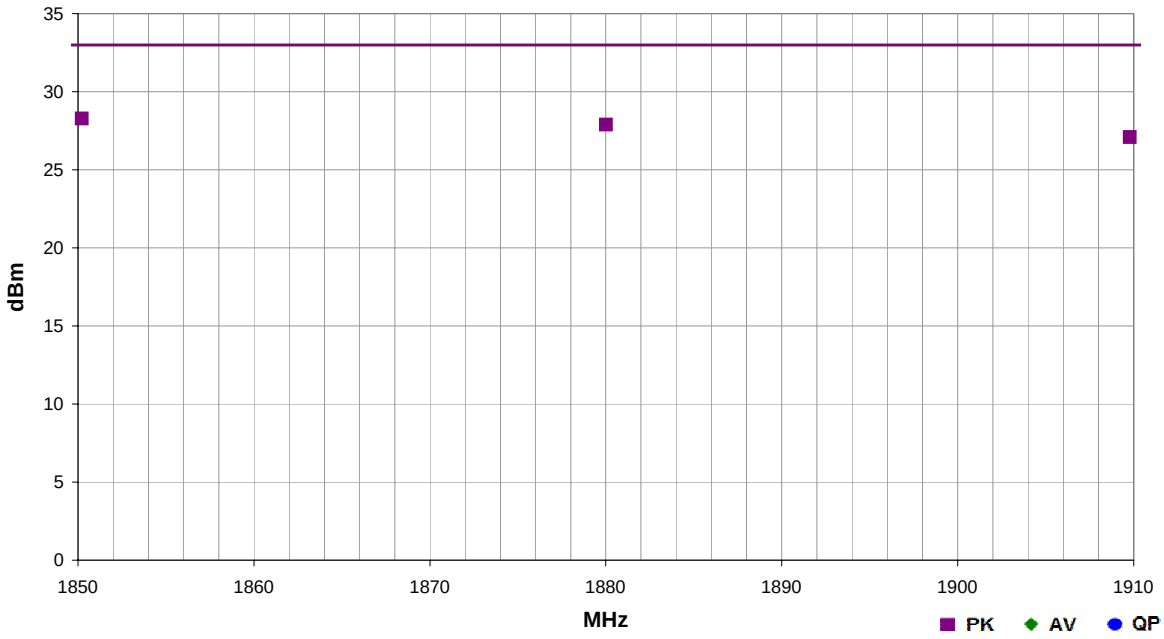
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1879.940	1.6	33.0	Horz	PK	1.23E+00	30.9	33.0	-2.1	Mid Ch.661 1880MHz, EUT Horz
	1879.955	1.0	169.0	Horz	PK	1.10E+00	30.4	33.0	-2.6	Mid Ch.661 1880MHz, EUT Vert
	1880.075	1.6	40.0	Vert	PK	1.08E+00	30.3	33.0	-2.7	Mid Ch.661 1880MHz, EUT On Side
	1850.260	1.0	68.0	Horz	PK	7.91E-01	29.0	33.0	-4.0	Low Ch.512 1850.2MHz, EUT Horz
	1909.760	1.0	62.0	Horz	PK	7.91E-01	29.0	33.0	-4.0	High Ch.810 1909.8MHz, EUT Horz
	1879.960	1.2	281.0	Vert	PK	5.27E-01	27.2	33.0	-5.8	Mid Ch.661 1880MHz, EUT Vert
	1879.945	1.9	202.0	Horz	PK	1.95E-01	22.9	33.0	-10.1	Mid Ch.661 1880MHz, EUT On Side
	1879.965	2.6	233.0	Vert	PK	3.72E-02	15.7	33.0	-17.3	Mid Ch.661 1880MHz, EUT Horz

EIRP PART 24E - 2G/3G - HIGH POWER

Work Order:	INTE5478	**Date:**	08/22/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV01	**Humidity:**	42.9% RH		
Serial Number:	None	**Barometric Pres.:**	1016.5 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx E-GPRS (EDGE) PCS1900 MCS-9 1up/1down				
Deviations:	None				
Comments:	Please reference the data comments for EUT orientation, frequency and channel.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	12	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



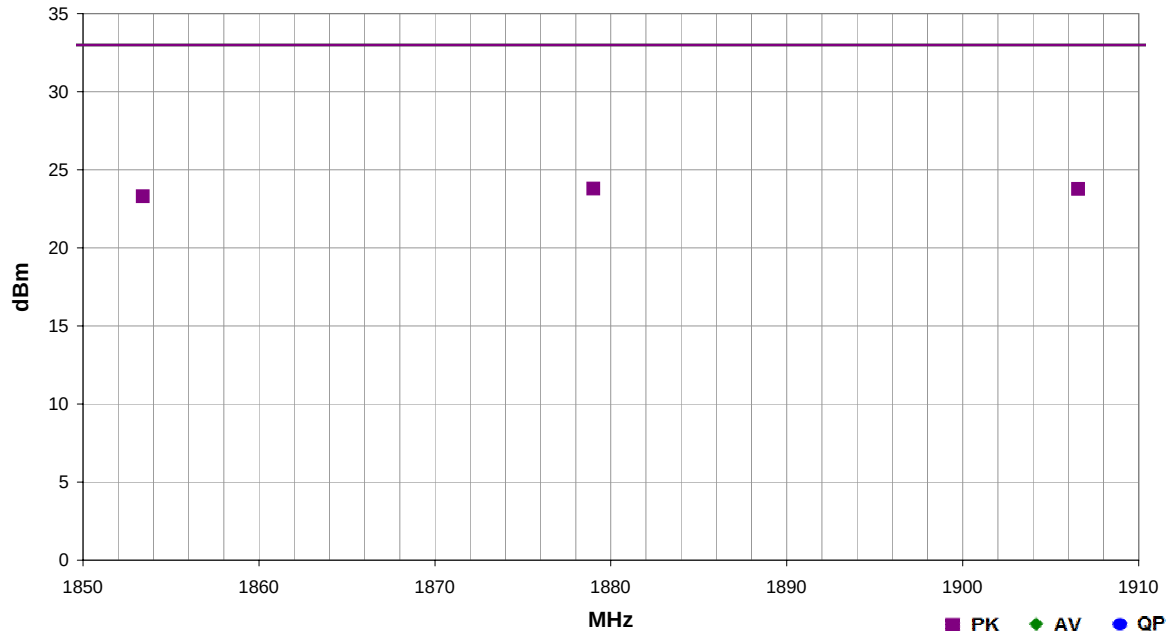
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1850.215	1.0	41.0	Horz	PK	6.73E-01	28.3	33.0	-4.7	Low Ch.512 1850.2MHz, EUT Horz
	1880.000	1.2	40.0	Horz	PK	6.14E-01	27.9	33.0	-5.1	Mid Ch.661 1880MHz, EUT Horz
	1909.780	1.0	71.0	Horz	PK	5.11E-01	27.1	33.0	-5.9	High Ch.810 1909.8MHz, EUT Horz

EIRP PART 24E - 2G/3G - HIGH POWER

Work Order:	INTE5478	**Date:**	08/22/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV01	**Humidity:**	42.9% RH		
Serial Number:	None	**Barometric Pres.:**	1016.5 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA R99, Band II, 12.2k				
Deviations:	None				
Comments:	Please reference the data comments for EUT orientation, frequency and channel.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	13	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1879.017	1.0	54.0	Horz	PK	2.40E-01	23.8	33.0	-9.2	Mid Ch.9400 1880MHz, EUT Horz
	1906.558	1.0	77.0	Horz	PK	2.38E-01	23.8	33.0	-9.2	High Ch.9538 1907.6MHz, EUT Horz
	1853.400	1.0	57.0	Horz	PK	2.13E-01	23.3	33.0	-9.7	Low Ch.9262 1852.4MHz, EUT Horz

EIRP PART 27 - 3G - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting WCDMA Band 4 (UMTS 1700), R99 12.2k

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	1710 MHz	Stop Frequency	1755 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	8/26/2014	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	8/26/2014	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2014	24 mo
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Antenna, Horn	EMCO	3115	AHC	6/13/2014	24 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

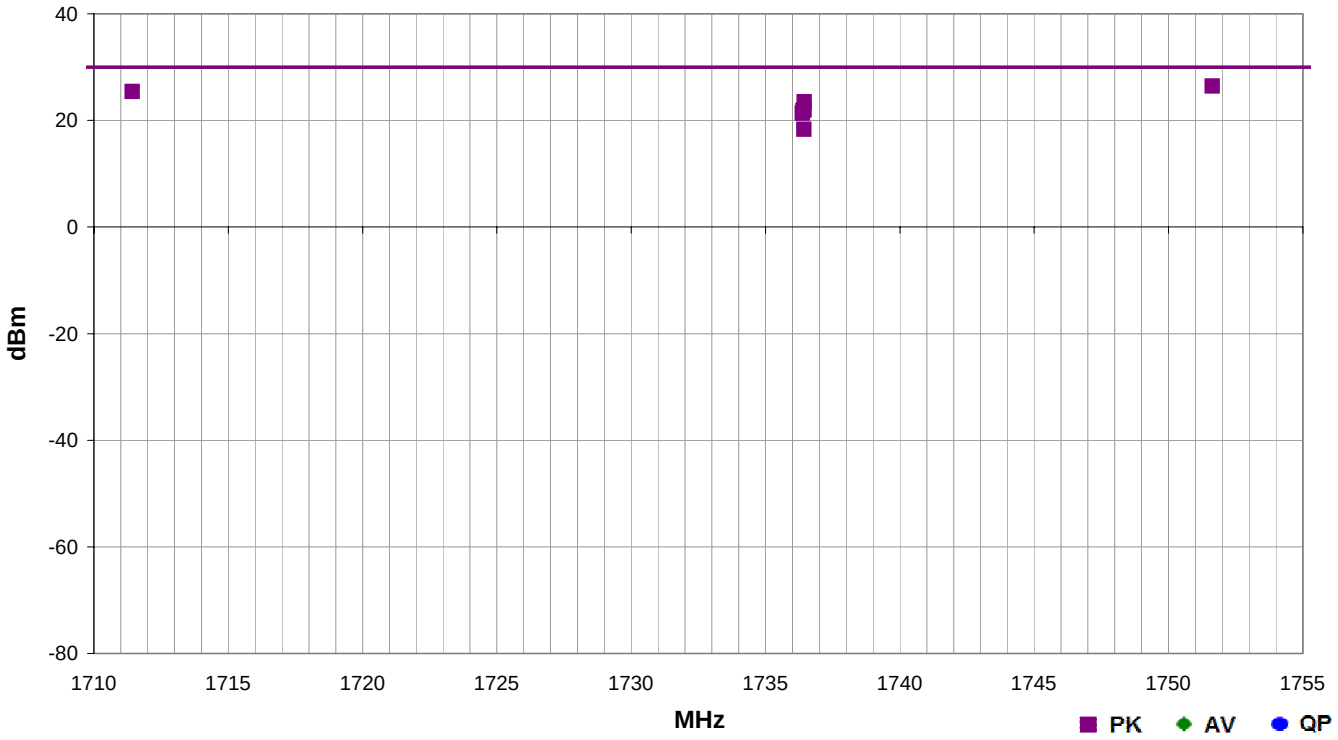
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 27 - 3G - HIGH POWER

Work Order:	INTE5478	**Date:**	08/24/14		
Project:	None	**Temperature:**	26 °C		
Job Site:	EV01	**Humidity:**	41% RH		
Serial Number:	None	**Barometric Pres.:**	1016.5 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx WCDMA UMTS 1700, R99 12.2k				
Deviations:	None				
Comments:	Please reference the data comments for EUT orientation, frequency and channel.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	14	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1751.625	1.0	62.0	Horz	PK	4.39E-01	26.4	30.0	-3.6	High Ch.1513 1752.6MHz, EUT Horz
	1711.433	1.0	48.0	Horz	PK	3.47E-01	25.4	30.0	-4.6	Low Ch.1312 1712.4MHz, EUT Horz
	1736.442	1.0	321.0	Horz	PK	2.25E-01	23.5	30.0	-6.5	Mid Ch.1427 1735.4MHz, EUT Horz
	1736.433	2.8	286.0	Vert	PK	1.59E-01	22.0	30.0	-8.0	Mid Ch.1427 1735.4MHz, EUT Horz
	1736.433	2.0	300.0	Vert	PK	1.59E-01	22.0	30.0	-8.0	Mid Ch.1427 1735.4MHz, EUT Vert
	1736.400	1.0	192.0	Horz	PK	1.52E-01	21.8	30.0	-8.2	Mid Ch.1427 1735.4MHz, EUT Vert
	1736.375	1.0	164.0	Vert	PK	1.36E-01	21.3	30.0	-8.7	Mid Ch.1427 1735.4MHz, EUT On Side
	1736.425	1.0	193.0	Horz	PK	6.79E-02	18.3	30.0	-11.7	Mid Ch.1427 1735.4MHz, EUT On Side

EIRP PART 24E - LTE BAND 2 - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE Band 2

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	1 GHz	Stop Frequency	3 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2014	24 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	8/26/2014	12 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	8/26/2014	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

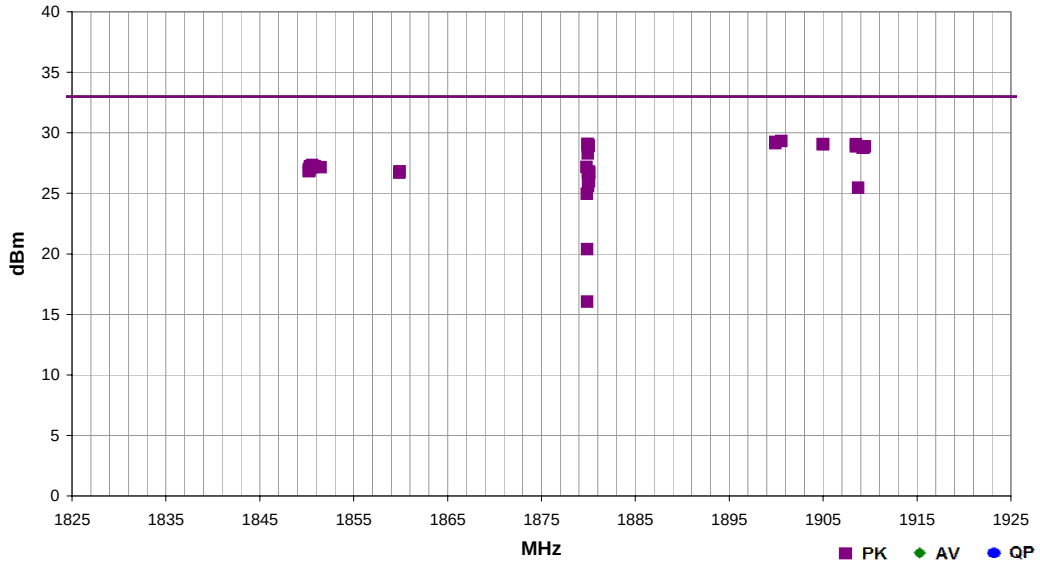
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 24E - LTE BAND 2 - HIGH POWER

Work Order:	INTE5478	**Date:**	08/08/14		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV01	**Humidity:**	41% RH		
Serial Number:	None	**Barometric Pres.:**	1019 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE Band 2. Reference data comments for resource block size and offset information.				
Deviations:	None				
Comments:	See data comments for channel, frequency and EUT orientation.				

Test Specifications	**Test Method**
FCC 24.232:2014	ANSI/TIA/EIA-603-C-2004

Run #	1	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1900.550	1.0	32.0	Horz	PK	8.57E-01	29.3	33.0	-3.7	High Ch. 19150, 1905MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1899.900	1.0	32.0	Horz	PK	8.38E-01	29.2	33.0	-3.8	High Ch. 19100, 1900MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1879.920	1.0	33.0	Horz	PK	8.11E-01	29.1	33.0	-3.9	Mid Ch. 18900, 1880MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1908.515	1.0	32.0	Horz	PK	8.05E-01	29.1	33.0	-3.9	High Ch. 19185, 1908.5MHz, 16QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1899.910	1.0	32.0	Horz	PK	8.18E-01	29.1	33.0	-3.9	High Ch. 19100, 1900MHz, 16QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1880.010	1.0	33.0	Horz	PK	7.93E-01	29.0	33.0	-4.0	Mid Ch. 18900, 1880MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	1905.030	1.0	32.0	Horz	PK	8.04E-01	29.1	33.0	-4.0	High Ch. 19125, 1902.5MHz, 16QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	1904.955	1.0	32.0	Horz	PK	8.04E-01	29.1	33.0	-4.0	High Ch. 19125, 1902.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	1880.050	1.0	33.0	Horz	PK	7.74E-01	28.9	33.0	-4.1	Mid Ch. 18900, 1880MHz, 16QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Horz
	1879.945	1.0	33.0	Horz	PK	7.74E-01	28.9	33.0	-4.1	Mid Ch. 18900, 1880MHz, 16QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1909.465	1.0	32.0	Horz	PK	7.69E-01	28.9	33.0	-4.1	High Ch. 19193, 1907.5MHz, 16QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	1909.255	1.0	32.0	Horz	PK	7.69E-01	28.9	33.0	-4.1	High Ch. 19193, 1909.3MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1908.495	1.0	32.0	Horz	PK	7.69E-01	28.9	33.0	-4.1	High Ch. 19185, 1908.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1909.335	1.0	32.0	Horz	PK	7.52E-01	28.8	33.0	-4.2	High Ch. 19150, 1905MHz, 16QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1909.205	1.0	32.0	Horz	PK	7.52E-01	28.8	33.0	-4.2	High Ch. 19193, 1909.3MHz, 16QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1879.930	1.0	46.0	Horz	PK	6.75E-01	28.3	33.0	-4.7	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1850.585	1.0	31.0	Horz	PK	5.41E-01	27.3	33.0	-5.7	Low Ch. 18650, 1855MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1850.865	1.0	31.0	Horz	PK	5.30E-01	27.2	33.0	-5.8	Low Ch. 18675, 1857.5MHz, 16QAM, 15MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1850.805	1.0	31.0	Horz	PK	5.30E-01	27.2	33.0	-5.8	Low Ch. 18675, 1857.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1850.350	1.0	32.0	Horz	PK	5.28E-01	27.2	33.0	-5.8	Low Ch. 18625, 1852.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1879.810	1.2	346.0	Vert	PK	5.24E-01	27.2	33.0	-5.8	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1851.480	1.0	35.0	Horz	PK	5.18E-01	27.1	33.0	-5.9	Low Ch. 18607, 1850.7MHz, 16QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1850.500	1.0	31.0	Horz	PK	5.16E-01	27.1	33.0	-5.9	Low Ch. 18650, 1855MHz, 16QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1850.265	1.0	34.0	Horz	PK	5.05E-01	27.0	33.0	-6.0	Low Ch. 18607, 1850.7MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1850.305	1.0	32.0	Horz	PK	4.93E-01	26.9	33.0	-6.1	Low Ch. 18625, 1852.5MHz, 16QAM, 5MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1859.900	1.0	33.0	Horz	PK	4.80E-01	26.8	33.0	-6.2	Low Ch. 18700, 1860MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1850.290	1.0	35.0	Horz	PK	4.82E-01	26.8	33.0	-6.2	Low Ch. 18615, 1851.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1850.210	1.0	34.0	Horz	PK	4.82E-01	26.8	33.0	-6.2	Low Ch. 18607, 1850.7MHz, 16QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1880.035	1.0	36.0	Horz	PK	4.78E-01	26.8	33.0	-6.2	Mid Ch. 18900, 1880MHz, 16QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1880.030	1.0	36.0	Horz	PK	4.78E-01	26.8	33.0	-6.2	Mid Ch. 18900, 1880MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	1859.880	1.0	33.0	Horz	PK	4.69E-01	26.7	33.0	-6.3	Low Ch. 18700, 1860MHz, 16QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Horz
	1880.110	1.0	36.0	Horz	PK	4.67E-01	26.7	33.0	-6.3	Mid Ch. 18900, 1880MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Horz
	1879.990	1.0	36.0	Horz	PK	4.67E-01	26.7	33.0	-6.3	Mid Ch. 18900, 1880MHz, 16QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	1879.970	1.0	36.0	Horz	PK	4.67E-01	26.7	33.0	-6.3	Mid Ch. 18900, 1880MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1879.965	1.0	36.0	Horz	PK	4.56E-01	26.6	33.0	-6.4	Mid Ch. 18900, 1880MHz, 16QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Horz
	1880.075	1.0	36.0	Horz	PK	3.97E-01	26.0	33.0	-7.0	Mid Ch. 18900, 1880MHz, 16QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1879.985	1.0	12.0	Horz	PK	3.62E-01	25.6	33.0	-7.4	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1908.750	1.0	32.0	Horz	PK	3.52E-01	25.5	33.0	-7.5	High Ch. 19195, 1907.5MHz, QPSK, 5MHz BW, RB Size 12, RB Offset 6, EUT Horz
	1879.855	1.2	272.0	Vert	PK	3.13E-01	25.0	33.0	-8.0	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1879.865	1.0	142.0	Horz	PK	1.09E-01	20.4	33.0	-12.6	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1879.865	1.2	103.0	Vert	PK	4.04E-02	16.1	33.0	-16.9	Mid Ch. 18900, 1880MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz

EIRP PART 27 - LTE BAND 4 - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE Band 4

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	1710 MHz	Stop Frequency	1755 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	8/26/2014	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	8/26/2014	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2014	24 mo
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Antenna, Horn	EMCO	3115	AHC	6/13/2014	24 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

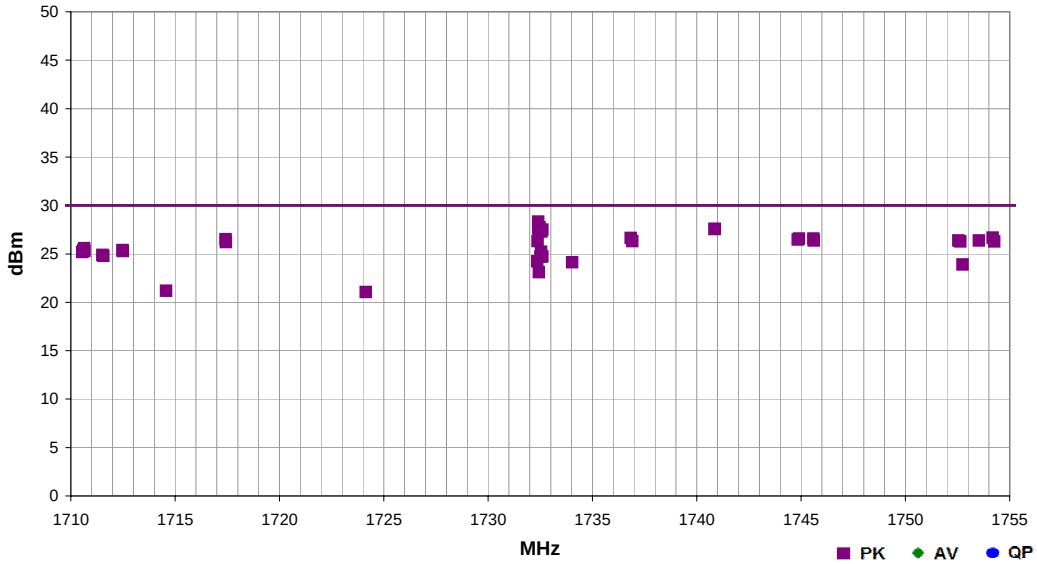
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 27 - LTE BAND 4 - HIGH POWER

Work Order:	INTE5478	**Date:**	08/11/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	None	**Barometric Pres.:**	1008 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE Band 4. Reference data comment for resource block size and offset information.				
Deviations:	None				
Comments:	See data comments for channel, frequency and EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	2	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1732.415	1.0	44.0	Horz	PK	6.78E-01	28.3	30.0	-1.7	Mid Ch.20175, 1732.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1732.463	1.0	248.0	Horz	PK	5.90E-01	27.7	30.0	-2.3	Mid Ch.20175, 1732.5MHz, 16-QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	1732.405	1.0	52.0	Horz	PK	5.90E-01	27.7	30.0	-2.3	Mid Ch.20175, 1732.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1740.867	1.0	245.0	Horz	PK	5.71E-01	27.6	30.0	-2.4	High Ch.20325, 1747.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 0, EUT Vert
	1740.863	1.0	245.0	Horz	PK	5.71E-01	27.6	30.0	-2.4	High Ch.20325, 1747.5MHz, 16-QAM, 15MHz BW, RB Size 1, RB Offset 0, EUT Vert
	1732.615	1.0	246.0	Horz	PK	5.64E-01	27.5	30.0	-2.5	Mid Ch.20175, 1732.5MHz, 16-QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	1732.455	1.0	60.0	Horz	PK	5.64E-01	27.5	30.0	-2.5	Mid Ch.20175, 1732.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	1732.460	1.0	61.0	Horz	PK	5.51E-01	27.4	30.0	-2.6	Mid Ch.20175, 1732.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Vert
	1732.423	1.0	248.0	Horz	PK	5.51E-01	27.4	30.0	-2.6	Mid Ch.20175, 1732.5MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	1732.565	1.0	249.0	Horz	PK	5.38E-01	27.3	30.0	-2.7	Mid Ch.20175, 1732.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	1754.180	1.0	248.0	Horz	PK	4.66E-01	26.7	30.0	-3.3	High Ch.20393, 1754.3MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1736.845	1.0	250.0	Horz	PK	4.59E-01	26.6	30.0	-3.4	Mid Ch.20175, 1732.5MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	1745.603	1.0	249.0	Horz	PK	4.55E-01	26.6	30.0	-3.4	High Ch.20350, 1750MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Vert
	1744.907	1.0	249.0	Horz	PK	4.55E-01	26.6	30.0	-3.4	High Ch.20300, 1745MHz, 16-QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	1717.417	1.0	251.0	Horz	PK	4.47E-01	26.5	30.0	-3.5	Low Ch.20050, 1720MHz, 16-QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	1744.843	1.0	249.0	Horz	PK	4.45E-01	26.5	30.0	-3.5	High Ch.20300, 1745MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	1745.607	1.0	249.0	Horz	PK	4.35E-01	26.4	30.0	-3.6	High Ch.20350, 1750MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Vert
	1752.543	1.0	249.0	Horz	PK	4.35E-01	26.4	30.0	-3.6	High Ch.20375, 1752.5MHz, 16-QAM, 5MHz BW, RB Size 12, RB Offset 12, EUT Vert
	1753.527	1.0	248.0	Horz	PK	4.35E-01	26.4	30.0	-3.6	High Ch.20385, 1753.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT Vert
	1736.920	1.0	247.0	Horz	PK	4.29E-01	26.3	30.0	-3.7	Mid Ch.20175, 1732.5MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	1732.380	1.0	236.0	Horz	PK	4.28E-01	26.3	30.0	-3.7	Mid Ch.20175, 1732.5MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1754.270	1.0	248.0	Horz	PK	4.25E-01	26.3	30.0	-3.7	High Ch.20393, 1754.3MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1752.640	1.0	248.0	Horz	PK	4.25E-01	26.3	30.0	-3.7	High Ch.20385, 1753.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Vert
	1717.437	1.0	247.0	Horz	PK	4.17E-01	26.2	30.0	-3.8	Low Ch.20025, 1717.5MHz, 16-QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	1710.640	1.0	326.0	Horz	PK	3.61E-01	25.6	30.0	-4.4	Low Ch.20000, 1715MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Vert
	1712.480	1.0	248.0	Horz	PK	3.45E-01	25.4	30.0	-4.6	Low Ch.19975, 1712.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	1710.593	1.0	326.0	Horz	PK	3.45E-01	25.4	30.0	-4.6	Low Ch.20000, 1715MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Vert
	1712.497	1.0	248.0	Horz	PK	3.37E-01	25.3	30.0	-4.7	Low Ch.19975, 1712.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	1710.660	1.0	326.0	Horz	PK	3.37E-01	25.3	30.0	-4.7	Low Ch.19957, 1710.7MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1710.553	1.0	326.0	Horz	PK	3.30E-01	25.2	30.0	-4.8	Low Ch.19957, 1710.7MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1732.540	2.7	285.0	Vert	PK	3.32E-01	25.2	30.0	-4.8	Mid Ch.20175, 1732.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Horz
	1711.513	1.0	246.0	Horz	PK	3.08E-01	24.9	30.0	-5.1	Low Ch.19965, 1711.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB Offset 7, EUT Vert
	1711.567	1.0	246.0	Horz	PK	3.01E-01	24.8	30.0	-5.2	Low Ch.19965, 1711.5MHz, QPSK, 3MHz BW, RB Size 1, RB Offset 7, EUT Vert
	1732.605	1.0	58.0	Horz	PK	2.96E-01	24.7	30.0	-5.3	Mid Ch.20175, 1732.5MHz, QPSK, 3MHz BW, RB Size 8, RB Offset 4, EUT Vert

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1732.515	1.0	46.0	Vert	PK	2.96E-01	24.7	30.0	-5.3	Mid Ch.20175, 1732.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1732.365	1.0	296.0	Vert	PK	2.64E-01	24.2	30.0	-5.8	Mid Ch.20175, 1732.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT Vert
	1734.035	1.0	58.0	Horz	PK	2.58E-01	24.1	30.0	-5.9	Mid Ch.20175, 1732.5MHz, QPSK, 5MHz BW, RB Size 12, RB Offset 11, EUT Vert
	1752.743	1.0	249.0	Horz	PK	2.44E-01	23.9	30.0	-6.1	High Ch.20375, 1752.5MHz, QPSK, 5MHz BW, RB Size 12, RB Offset 12, EUT Vert
	1732.440	1.0	63.0	Horz	PK	2.05E-01	23.1	30.0	-6.9	Mid Ch.20175, 1732.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB Offset 2, EUT On Side
	1714.567	1.0	327.0	Horz	PK	1.32E-01	21.2	30.0	-8.8	Low Ch.20025, 1717.5MHz, QPSK, 15MHz BW, RB Size 36, RB Offset 18, EUT Vert
	1724.147	1.0	251.0	Horz	PK	1.27E-01	21.1	30.0	-9.0	Low Ch.20050, 1720MHz, QPSK, 20MHz BW, RB Size 50, RB Offset 49, EUT Vert

ERP PART 22H LTE BAND 13 - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE Band 5

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	1000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Antenna, Dipole	EMCO	3121C-DB4	ADTD	4/3/2014	36 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Wireless Communication Test Set	Agilent	E5515C	BSV	NCR	0 mo
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

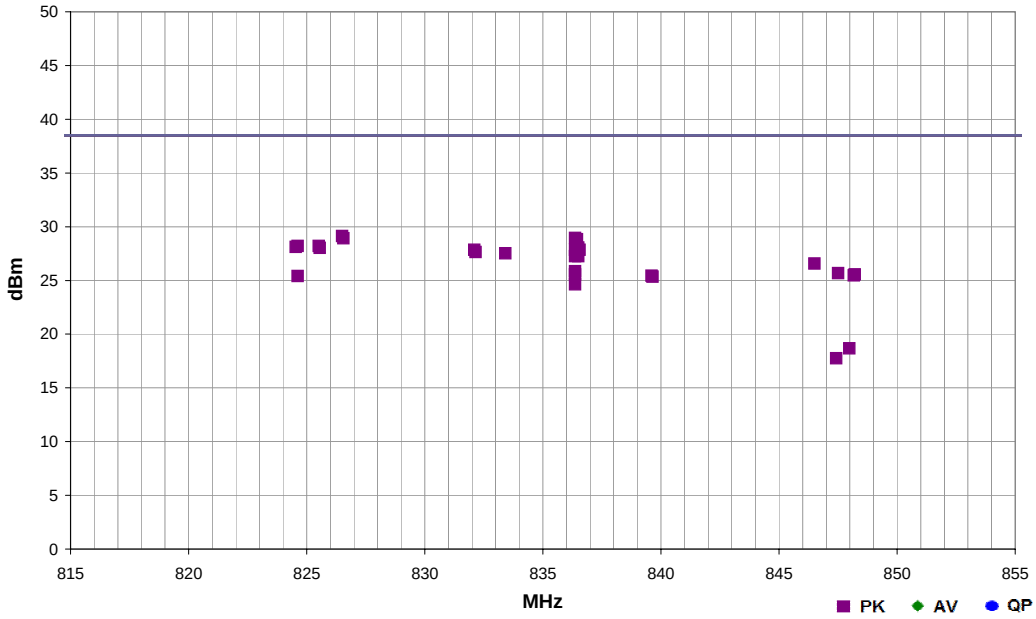
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

ERP PART 22H LTE BAND 13 - HIGH POWER

Work Order:	INTE5478	**Date:**	08/11/14		
Project:	None	**Temperature:**	25 °C		
Job Site:	EV01	**Humidity:**	42% RH		
Serial Number:	None	**Barometric Pres.:**	1009 mbar	**Tested by:**	Brandon Hobbs, Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE Band 5. Reference data comment for resource block size and offset information.				
Deviations:	None				
Comments:	See data comments for channel, frequency and EUT orientation.				

Test Specifications	**Test Method**
FCC 22.913:2012	ANSI/TIA/EIA-603-C-2004

Run #	4	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	826.508	1.0	180.0	Horz	PK	8.15E-01	29.1	38.5	-9.4	Low Ch. 20425, 826.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB offset 12, EUT Vert
	836.366	1.6	191.0	Horz	PK	7.83E-01	28.9	38.5	-9.6	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB offset 2, EUT Vert
	826.559	1.0	180.0	Horz	PK	7.78E-01	28.9	38.5	-9.6	Low Ch. 20425, 826.5MHz, QPSK, 5MHz BW, RB Size 1, RB offset 12, EUT Vert
	836.454	1.6	196.0	Horz	PK	7.66E-01	28.8	38.5	-9.7	Mid Ch. 20525, 836.5MHz, QPSK, 3MHz BW, RB Size 1, RB offset 7, EUT Vert
	836.419	1.6	196.0	Horz	PK	7.48E-01	28.7	38.5	-9.8	Mid Ch. 20525, 836.5MHz, 16QAM, 1.4MHz BW, RB Size 1, RB offset 2, EUT Vert
	824.618	1.0	180.0	Horz	PK	6.62E-01	28.2	38.5	-10.3	Low Ch. 20407, 824.7MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB offset 2, EUT Vert
	825.510	1.0	180.0	Horz	PK	6.62E-01	28.2	38.5	-10.3	Low Ch. 20415, 825.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB offset 7, EUT Vert
	824.546	1.0	180.0	Horz	PK	6.47E-01	28.1	38.5	-10.4	Low Ch. 20450, 829MHz, QPSK, 10MHz BW, RB Size 1, RB offset 0, EUT Vert
	825.559	1.0	180.0	Horz	PK	6.32E-01	28.0	38.5	-10.5	Low Ch. 20415, 825.5MHz, QPSK, 3MHz BW, RB Size 1, RB offset 7, EUT Vert
	836.510	1.0	178.0	Horz	PK	6.37E-01	28.0	38.5	-10.5	Mid Ch. 20525, 836.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB offset 12, EUT Vert
	832.102	1.0	178.0	Horz	PK	6.07E-01	27.8	38.5	-10.7	Mid Ch. 20525, 836.5MHz, 16-QAM, 10MHz BW, RB Size 1, RB offset 0, EUT Vert
	836.366	1.0	182.0	Horz	PK	6.08E-01	27.8	38.5	-10.7	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB offset 2, EUT On Side
	836.559	1.0	178.0	Horz	PK	6.08E-01	27.8	38.5	-10.7	Mid Ch. 20525, 836.5MHz, QPSK, 5MHz BW, RB Size 1, RB offset 12, EUT Vert
	832.149	1.0	178.0	Horz	PK	5.79E-01	27.6	38.5	-10.9	Mid Ch. 20525, 836.5MHz, QPSK, 10MHz BW, RB Size 1, RB offset 0, EUT Vert
	833.419	1.0	180.0	Horz	PK	5.66E-01	27.5	38.5	-11.0	Low Ch. 20450, 829MHz, 16-QAM, 10MHz BW, RB Size 1, RB offset 49, EUT Vert
	836.366	1.0	240.0	Horz	PK	5.30E-01	27.2	38.5	-11.3	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB offset 2, EUT Horz
	836.510	1.0	178.0	Horz	PK	5.30E-01	27.2	38.5	-11.3	Mid Ch. 20525, 836.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB offset 7, EUT Vert
	846.510	1.0	303.0	Horz	PK	4.53E-01	26.6	38.5	-11.9	High Ch. 20625, 846.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB offset 12, EUT Vert
	836.366	1.1	65.0	Vert	PK	3.84E-01	25.8	38.5	-12.7	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB offset 2, EUT Vert
	847.509	1.0	303.0	Horz	PK	3.68E-01	25.7	38.5	-12.8	High Ch. 20635, 847.5MHz, 16-QAM, 3MHz BW, RB Size 1, RB offset 7, EUT Vert
	848.217	1.0	303.0	Horz	PK	3.60E-01	25.6	38.5	-12.9	High Ch. 20643, 848.3MHz, 16-QAM, 1.4MHz BW, RB Size 1, RB offset 2, EUT Vert
	836.366	1.8	84.0	Vert	PK	3.58E-01	25.5	38.5	-13.0	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB offset 2, EUT On Side
	848.167	1.0	303.0	Horz	PK	3.52E-01	25.5	38.5	-13.0	High Ch. 20643, 848.3MHz, QPSK, 1.4MHz BW, RB Size 1, RB offset 2, EUT Vert
	824.622	1.0	180.0	Horz	PK	3.48E-01	25.4	38.5	-13.1	Low Ch. 20407, 824.7MHz, QPSK, 1.4MHz BW, RB Size 3, RB offset 2, EUT Vert
	839.601	1.0	303.0	Horz	PK	3.50E-01	25.4	38.5	-13.1	High Ch. 20600, 844MHz, 16-QAM, 10MHz BW, RB Size 1, RB offset 0, EUT Vert
	839.649	1.0	303.0	Horz	PK	3.42E-01	25.3	38.5	-13.2	High Ch. 20600, 844MHz, QPSK, 10MHz BW, RB Size 1, RB offset 0, EUT Vert
	836.366	1.0	231.0	Vert	PK	2.91E-01	24.6	38.5	-13.9	Mid Ch. 20525, 836.5MHz, QPSK, 1.4MHz BW, RB Size 1, RB offset 2, EUT Horz
	847.977	1.0	303.0	Horz	PK	7.35E-02	18.7	38.5	-19.8	High Ch. 20635, 847.5MHz, QPSK, 3MHz BW, RB Size 8, RB offset 4, EUT Vert
	847.423	1.0	303.0	Horz	PK	5.97E-02	17.8	38.5	-20.7	High Ch. 20625, 846.5MHz, QPSK, 5MHz BW, RB Size 12, RB offset 11, EUT Vert

EIRP PART 27 - LTE BAND 7 - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE Band 7

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	1 GHz	Stop Frequency	3 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	8/26/2014	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	8/26/2014	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2014	24 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Antenna, Horn	EMCO	3115	AHC	6/13/2014	24 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

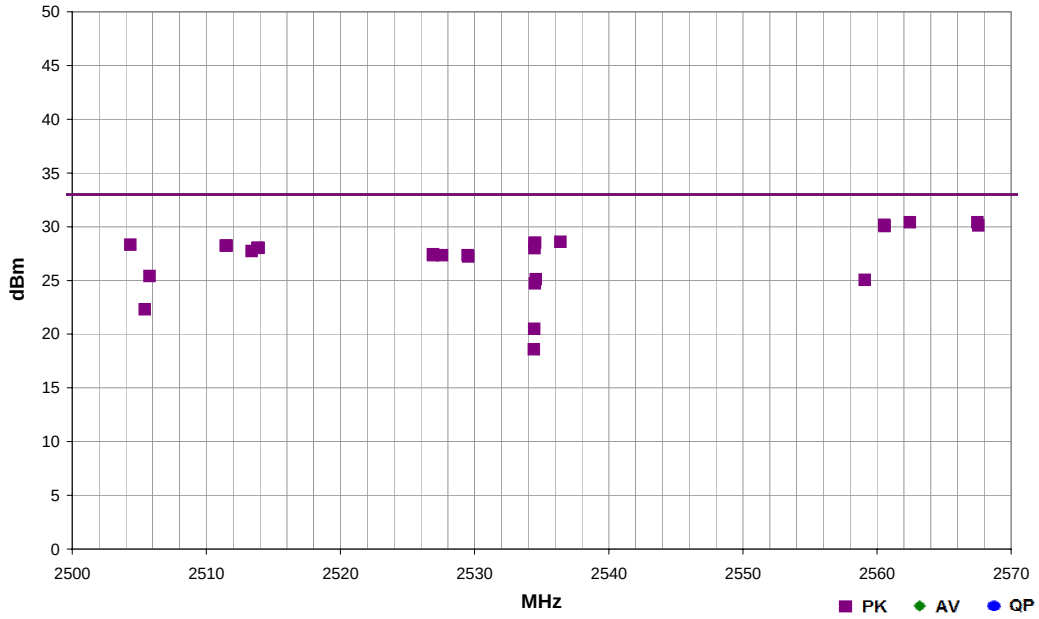
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EIRP PART 27 - LTE BAND 7 - HIGH POWER

Work Order:	INTE5478	**Date:**	08/11/14		
Project:	None	**Temperature:**	26.2 °C		
Job Site:	EV01	**Humidity:**	45.9% RH		
Serial Number:	None	**Barometric Pres.:**	1009.3 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE Band 7. Reference data comment for resource block size and offset information.				
Deviations:	None				
Comments:	See data comments for channel, frequency and EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	3	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	2567.483	1.0	318.0	Horz	PK	1.10E+00	30.4	33.0	-2.6	High Ch.21425, 2567.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	2562.457	1.0	320.0	Horz	PK	1.10E+00	30.4	33.0	-2.6	High Ch.21375, 2562.5MHz, 16QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	2560.543	1.0	320.0	Horz	PK	1.04E+00	30.2	33.0	-2.8	High Ch.21400, 2565MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Vert
	2567.560	1.0	320.0	Horz	PK	1.02E+00	30.1	33.0	-2.9	High Ch.21425, 2567.5MHz, 16QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	2560.583	1.0	320.0	Horz	PK	1.01E+00	30.1	33.0	-2.9	High Ch.21400, 2565MHz, 16QAM, 10MHz BW, RB Size 1, RB Offset 0, EUT Vert
	2536.413	1.0	316.0	Horz	PK	7.23E-01	28.6	33.0	-4.4	Mid Ch.21070, 2532MHz, 16QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	2534.480	1.0	314.0	Horz	PK	7.05E-01	28.5	33.0	-4.5	Mid Ch.21095, 2534.5MHz, 16QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	2534.527	1.0	328.0	Horz	PK	7.06E-01	28.5	33.0	-4.5	Mid Ch.21095, 2534.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	2504.353	1.0	316.0	Horz	PK	6.78E-01	28.3	33.0	-4.7	Low Ch.20815, 2506.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	2511.513	1.0	318.0	Horz	PK	6.65E-01	28.2	33.0	-4.8	Low Ch.20865, 2511.5MHz, 16QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	2511.463	1.0	318.0	Horz	PK	6.65E-01	28.2	33.0	-4.8	Low Ch.20865, 2511.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	2513.920	1.0	318.0	Horz	PK	6.35E-01	28.0	33.0	-5.0	Low Ch.20890, 2514MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	2513.807	1.0	318.0	Horz	PK	6.35E-01	28.0	33.0	-5.0	Low Ch.20890, 2514MHz, 16QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	2534.477	1.0	303.0	Horz	PK	6.28E-01	28.0	33.0	-5.0	Mid Ch.21095, 2534.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	2513.390	1.0	318.0	Horz	PK	5.93E-01	27.7	33.0	-5.3	Low Ch.20840, 2509MHz, 16QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	2526.910	1.0	316.0	Horz	PK	5.53E-01	27.4	33.0	-5.6	Mid Ch.21020, 2527MHz, QPSK, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	2529.490	1.0	316.0	Horz	PK	5.41E-01	27.3	33.0	-5.7	Mid Ch.21045, 2529.5MHz, 16QAM, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	2527.590	1.0	316.0	Horz	PK	5.41E-01	27.3	33.0	-5.7	Mid Ch.21070, 2532MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 0, EUT Vert
	2526.903	1.0	316.0	Horz	PK	5.41E-01	27.3	33.0	-5.7	Mid Ch.21020, 2527MHz, 16QAM, 20MHz BW, RB Size 1, RB Offset 49, EUT Vert
	2529.533	1.0	316.0	Horz	PK	5.28E-01	27.2	33.0	-5.8	Mid Ch.21045, 2529.5MHz, QPSK, 15MHz BW, RB Size 1, RB Offset 37, EUT Vert
	2505.780	1.0	318.0	Horz	PK	3.48E-01	25.4	33.0	-7.6	Low Ch.20815, 2506.5MHz, 16QAM, 5MHz BW, RB Size 12, RB Offset 6, EUT Vert
	2534.563	1.0	279.0	Vert	PK	3.23E-01	25.1	33.0	-7.9	Mid Ch.21095, 2534.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	2559.093	1.0	320.0	Horz	PK	3.20E-01	25.1	33.0	-8.0	High Ch.21375, 2562.MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	2534.497	2.2	283.0	Vert	PK	2.97E-01	24.7	33.0	-8.3	Mid Ch.21095, 2534.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	2505.417	1.0	318.0	Horz	PK	1.70E-01	22.3	33.0	-10.7	High Ch.21375, 2562.5MHz, QPSK, 15MHz BW, RB Size 36, RB Offset 0, EUT Vert
	2534.453	1.0	326.0	Horz	PK	1.12E-01	20.5	33.0	-12.5	Mid Ch.21095, 2534.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side
	2534.437	1.0	209.0	Vert	PK	7.21E-02	18.6	33.0	-14.4	Mid Ch.21095, 2534.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side

ERP PART 27 - LTE BAND 13 - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE Band 13

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	776 MHz	Stop Frequency	788 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Antenna, Dipole	EMCO	3121C-DB4	ADTD	4/3/2014	36 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

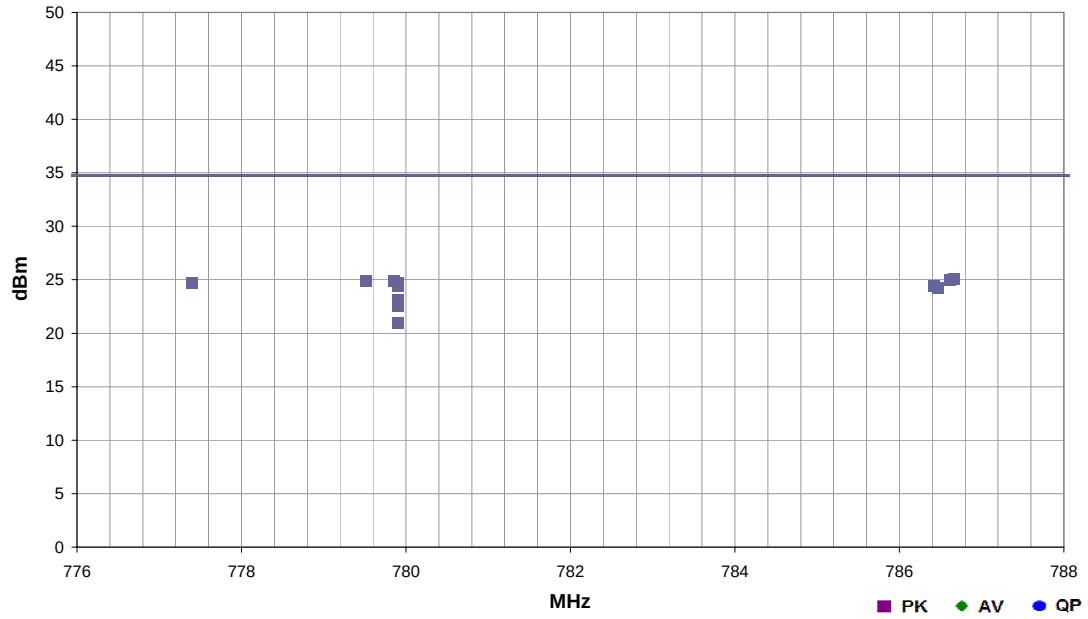
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

ERP PART 27 - LTE BAND 13 - HIGH POWER

Work Order:	INTE5478	**Date:**	08/12/14		
Project:	None	**Temperature:**	24.7 °C		
Job Site:	EV01	**Humidity:**	46.7% RH		
Serial Number:	None	**Barometric Pres.:**	1011 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE Band 2. Reference data comment for resource block size and offset information.				
Deviations:	None				
Comments:	See data comments for channel, frequency and EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	5	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	786.670	1.7	190.0	Horz	PK	3.21E-01	25.1	34.8	-9.7	High Ch. 23255, 784.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 24, EUT Vert
	786.615	1.7	190.0	Horz	PK	3.13E-01	25.0	34.8	-9.8	High Ch. 23255, 784.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 24, EUT Vert
	779.510	1.7	190.0	Horz	PK	3.06E-01	24.9	34.8	-9.9	Low Ch. 23205, 779.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	779.851	1.7	190.0	Horz	PK	3.06E-01	24.9	34.8	-9.9	Mid Ch. 23230, 782MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	777.399	1.7	190.0	Horz	PK	2.92E-01	24.7	34.8	-10.1	Low Ch. 23205, 779.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	779.899	1.7	205.0	Horz	PK	2.92E-01	24.7	34.8	-10.1	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	779.899	1.0	35.0	Horz	PK	2.79E-01	24.5	34.8	-10.3	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Horz
	786.418	1.7	190.0	Horz	PK	2.79E-01	24.5	34.8	-10.3	Mid Ch. 23230, 782MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	786.470	1.7	190.0	Horz	PK	2.67E-01	24.3	34.8	-10.5	Mid Ch. 23230, 782MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Vert
	779.899	1.4	33.0	Vert	PK	2.02E-01	23.1	34.8	-11.7	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT On Side
	779.899	1.0	282.0	Horz	PK	1.85E-01	22.7	34.8	-12.1	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT On Side
	779.899	1.2	81.0	Vert	PK	1.80E-01	22.6	34.8	-12.2	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Vert
	779.899	1.1	143.0	Vert	PK	1.25E-01	21.0	34.8	-13.8	Mid Ch. 23230, 782MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 0, EUT Horz

ERP PART 27 - LTE BAND 17 - HIGH POWER

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting LTE Band 17

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

INTE5478 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	704 MHz	Stop Frequency	716 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Bilog Cables	EVA	2/18/2014	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/18/2014	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
Radio Communication Analyzer	Anritsu	MT8820C	AFK	10/3/2013	12 mo
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36 mo
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36 mo
Power Meter	Agilent	N1913A	SQR	4/29/2013	36 mo
Antenna, Dipole	EMCO	3121C-DB4	ADTD	4/3/2014	36 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

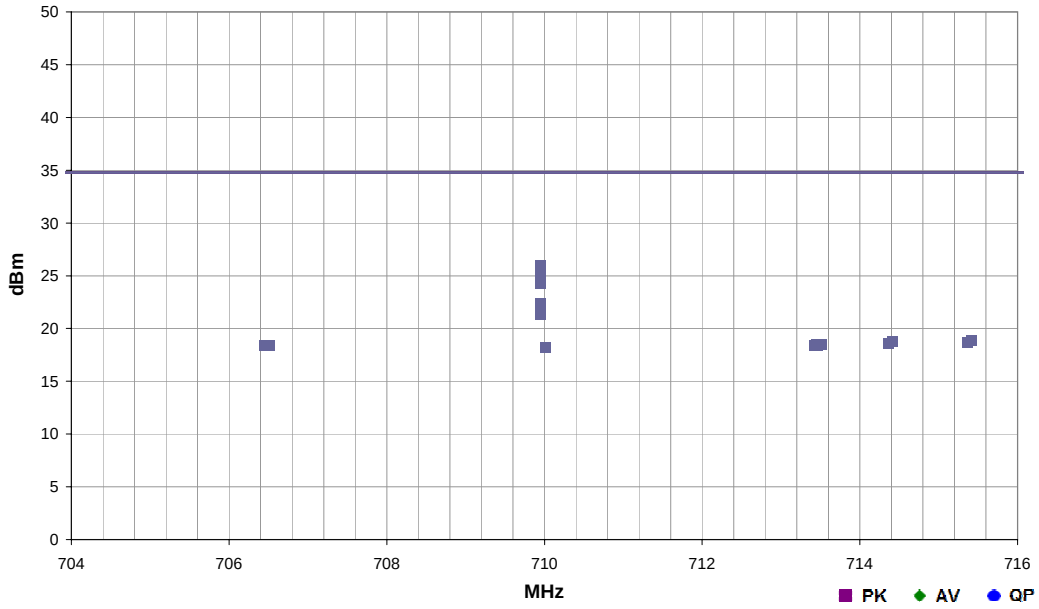
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP – 2.15.

ERP PART 27 - LTE BAND 17 - HIGH POWER

Work Order:	INTE5478	**Date:**	08/12/14		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV01	**Humidity:**	41% RH		
Serial Number:	None	**Barometric Pres.:**	1011 mbar	**Tested by:**	Jared Ison
EUT:	Laptop/Tablet Convertible				
Configuration:	1				
Customer:	Intel Corporation				
Attendees:	Mike Lowe				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting LTE Band 2. Reference data comment for resource block size and offset information.				
Deviations:	None				
Comments:	See data comments for channel, frequency and EUT orientation.				

Test Specifications	**Test Method**
FCC 27.50:2014	ANSI/TIA/EIA-603-C-2004

Run #	6	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	709.954	1.1	302.0	Horz	PK	3.92E-01	25.9	34.8	-8.8	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	709.954	2.0	185.0	Horz	PK	3.41E-01	25.3	34.8	-9.4	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	709.954	1.6	0.0	Vert	PK	2.69E-01	24.3	34.8	-10.5	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side
	709.954	1.4	233.0	Vert	PK	1.74E-01	22.4	34.8	-12.4	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Vert
	709.954	1.2	68.0	Horz	PK	1.36E-01	21.3	34.8	-13.4	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT On Side
	709.954	1.9	191.0	Vert	PK	1.38E-01	21.4	34.8	-13.4	Mid Ch. 23790, 710MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	715.419	1.9	191.0	Horz	PK	7.62E-02	18.8	34.8	-16.0	High Ch. 23800, 711MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	714.418	1.9	191.0	Horz	PK	7.46E-02	18.7	34.8	-16.0	Mid Ch. 23790, 710MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	715.367	1.9	191.0	Horz	PK	7.45E-02	18.7	34.8	-16.1	High Ch. 23800, 711MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	714.366	1.9	191.0	Horz	PK	7.29E-02	18.6	34.8	-16.1	Mid Ch. 23790, 710MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	713.510	1.9	191.0	Horz	PK	7.13E-02	18.5	34.8	-16.2	High Ch. 23825, 713.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	713.454	1.9	191.0	Horz	PK	7.13E-02	18.5	34.8	-16.2	High Ch. 23825, 713.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	713.419	1.9	191.0	Horz	PK	6.97E-02	18.4	34.8	-16.3	Low Ch. 23780, 709MHz, 16-QAM, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	713.469	1.9	191.0	Horz	PK	6.81E-02	18.3	34.8	-16.4	Low Ch. 23780, 709MHz, QPSK, 10MHz BW, RB Size 1, RB Offset 49, EUT Horz
	706.510	1.9	191.0	Horz	PK	6.81E-02	18.3	34.8	-16.4	Low Ch. 23755, 706.5MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	706.454	1.9	191.0	Horz	PK	6.81E-02	18.3	34.8	-16.4	Low Ch. 23755, 706.5MHz, QPSK, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz
	710.008	1.9	191.0	Horz	PK	6.65E-02	18.2	34.8	-16.5	Mid Ch. 23790, 710MHz, 16-QAM, 5MHz BW, RB Size 1, RB Offset 12, EUT Horz