



element[®]

Netcomm Wireless

NTC-140-01

Cellular Radio

FCC 22H:2017

FCC 24E:2017

FCC 27:2017

Report # NETC0005



NVLAP Lab Code: 200630-0

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2017-1-25

CERTIFICATE OF TEST

Last Date of Test: April 28, 2017
Netcomm Wireless
Model: NTC-140-01

Radio Equipment Testing

Standards

Specification	Method
FCC 22.913:2017	ANSI/TIA/EIA-603-D-2010
FCC 22.917:2017	
FCC 24.232:2017	
FCC 24.238:2017	
FCC 27.50:2017	
FCC 27.53:2017	

Results

Method Clause	Test Description	Applied	Results	Comments
2.2.1	Conducted Output Power	No	N/A	See Sporton Lab Test Report Nos. FG441109A and FG441109B
2.2.2	Frequency Stability	No	N/A	See Sporton Lab Test Report Nos. FG441109A and FG441109B
2.2.3	Occupied Bandwidth Emission Mask	No	N/A	See Sporton Lab Test Report Nos. FG441109A and FG441109B
2.2.12	Out of Band Emissions Part 22H - 2G, 3G	Yes	Pass	
2.2.12	Out of Band Emissions Part 24E - 2G, 3G	Yes	Pass	
2.2.12	Out of Band Emissions Part 27 - 3G	Yes	Pass	
2.2.12	Out of Band Emissions Part 24E - LTE Band 2	Yes	Pass	
2.2.12	Out of Band Emissions Part 27 - LTE Band 4	Yes	Pass	
2.2.12	Out of Band Emissions Part 22H - LTE Band 5	Yes	Pass	
2.2.12	Out of Band Emissions Part 27 - LTE Band 13	Yes	Pass	
2.2.12	Out of Band Emissions Part 27 - LTE Band 17	Yes	Pass	
2.2.12	Out of Band Emissions Part 24E - LTE Band 25	Yes	Pass	
2.2.13	Spurious Emissions at the Antenna Terminals	No	N/A	See Sporton Lab Test Report Nos. FG441109A and FG441109B
2.2.17.2	ERP Part 22H - 2G, 3G	Yes	Pass	
2.2.17.2	EIRP Part 24E - 2G, 3G	Yes	Pass	
2.2.17.2	EIRP Part 27 - 3G	Yes	Pass	
2.2.17.2	EIRP Part 24E - LTE Band 2	Yes	Pass	
2.2.17.2	EIRP Part 27 - LTE Band 4	Yes	Pass	
2.2.17.2	ERP Part 22H - LTE Band 5	Yes	Pass	
2.2.17.2	ERP Part 27 - LTE Band 13	Yes	Pass	
2.2.17.2	EIRP Part 24E - LTE Band 25	Yes	Pass	

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. 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. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.



CERTIFICATE OF TEST

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

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. 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. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY



Revision Number	Description	Date	Page Number
00	None		

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 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Validated by the European Commission 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

MSIP / 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.

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://portlandcustomer.element.com/ts/scope/scope.htm>

<http://gsi.nist.gov/global/docs/cabs/designations.html>

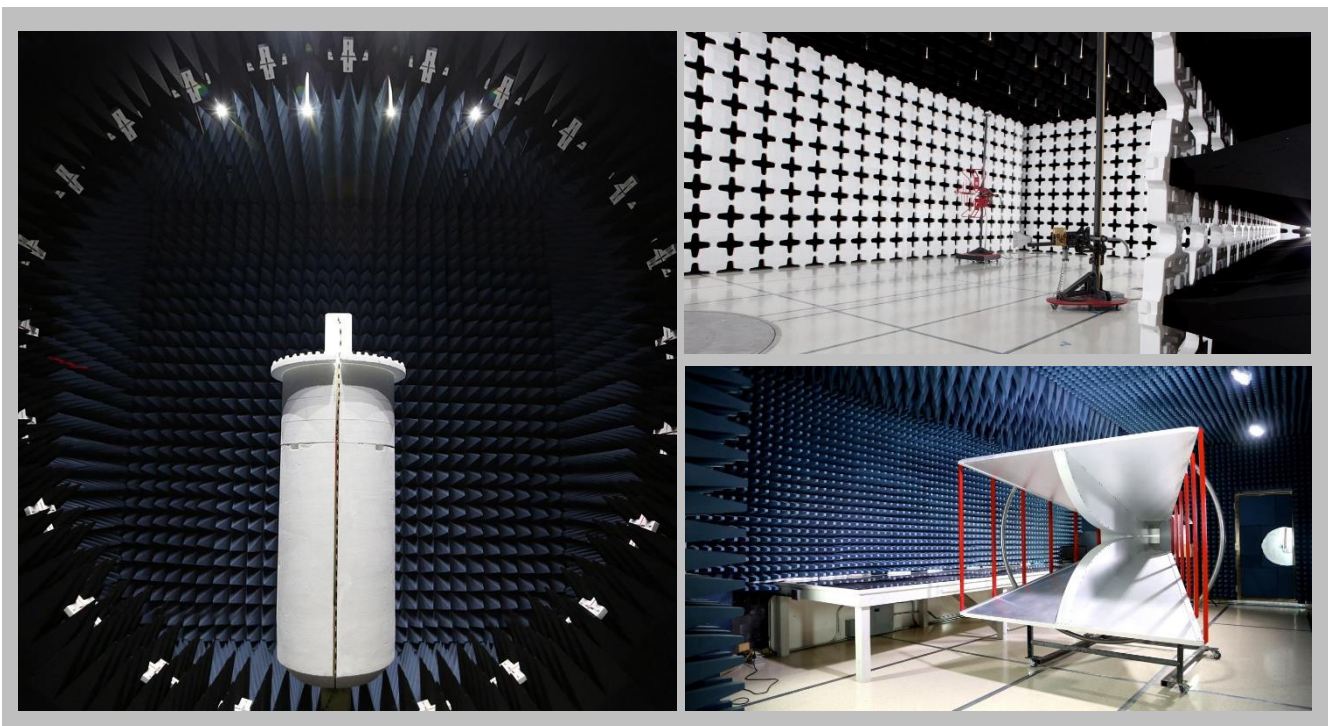
FACILITIES



2017.3.2

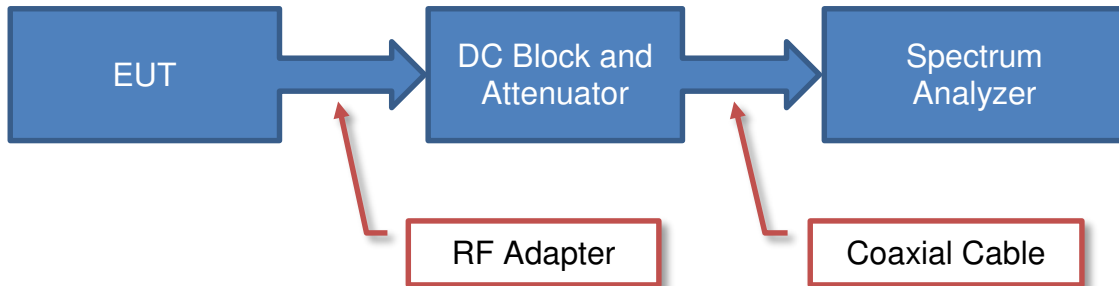


California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157

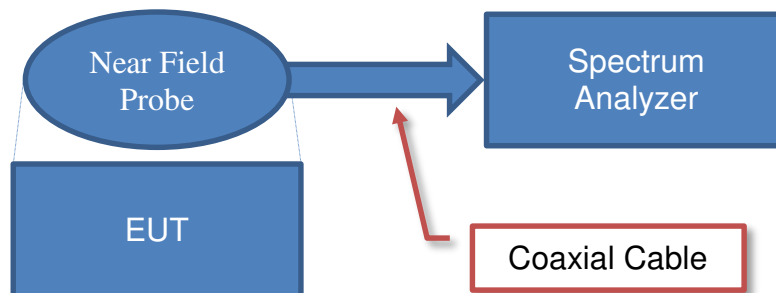


Test Setup Block Diagrams

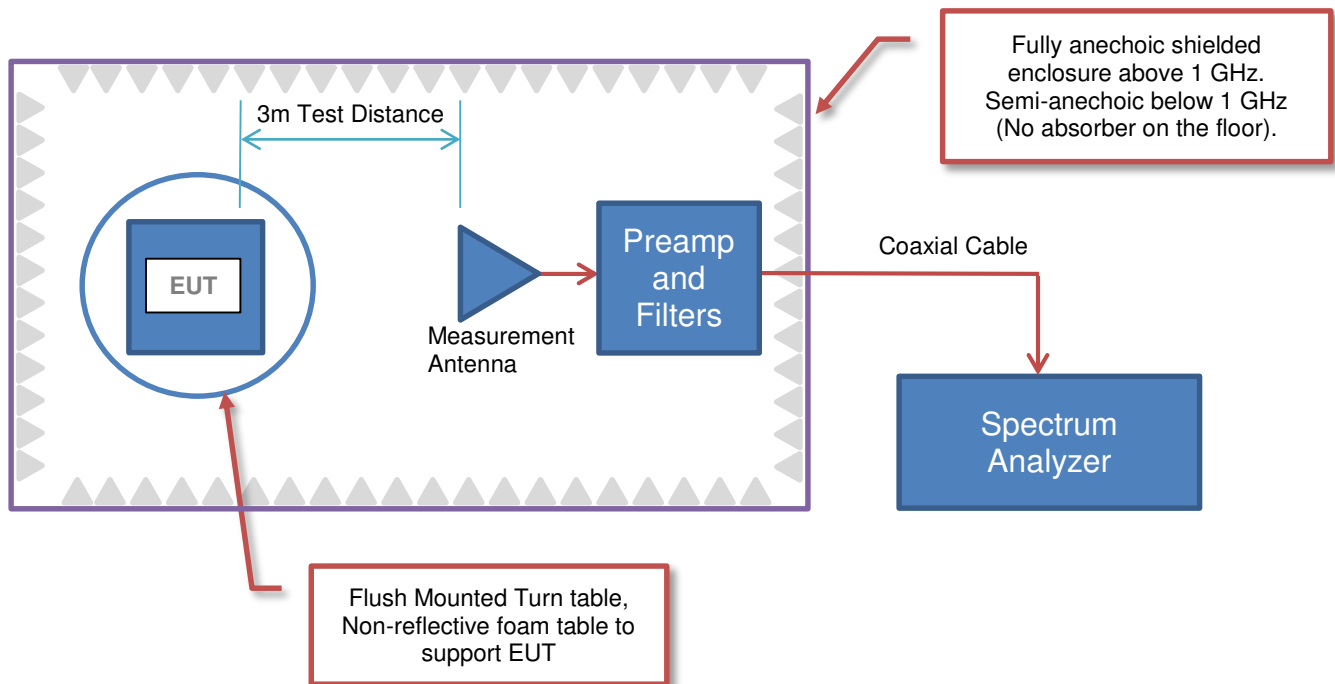
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Netcomm Wireless
Address:	18-20 Orion Road
City, State, Zip:	Lane Cove, Sydney, NSW 2066 Australia
Test Requested By:	Bud Sundeen
Model:	NTC-140-01
First Date of Test:	April 3, 2017
Last Date of Test:	April 28, 2017
Receipt Date of Samples:	March 30, 2017
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

NTC-140-01 router provides real-time M2M data connectivity, through a cellular radio. The NTC-140W creates reliable point-to-point or point-to-multi-point WAN connections for a variety of mission critical applications such as primary broadband, video surveillance, retail, payments, in-vehicle communications and business continuity.

Testing Objective:

To demonstrate compliance of the Cellular radio to FCC 22H, 24E, and 27 requirements.

CONFIGURATIONS



2017-1-25

Configuration NETC0005- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Router	NetComm Wireless	NTC-140-01	8

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Adapter	Switching Power Supply	S018KM12000150	None
Tube Antenna with Magnetic Base x2	NetComm Wireless	ANT-0050	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power Cable	No	1.6m	No	AC/DC Adapter	Wireless Router
SMA to SMB x2	Yes	0.2m	No	Wireless Router	SMB
SMB	Yes	2.5m	No	SMA to SMB x2	Tube Antenna with Magnetic Base x2
Cat5 x2	No	3.0m	No	Wireless Router	Unterminated
Micro USB	Yes	0.9m	No	Wireless Router	Unterminated

Configuration NETC0007- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Router	NetComm Wireless	NTC-140-01	8

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Adapter	Switching Power Supply	S018KM12000150	None
Tube Antenna with Magnetic Base x2	NetComm Wireless	ANT-0050	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power Cable	No	1.6m	No	AC/DC Adapter	Wireless Router
SMA to SMB x2	Yes	0.2m	No	Wireless Router	SMB
SMB	Yes	2.5m	No	SMA to SMB x2	Tube Antenna with Magnetic Base x2
Cat5 x2	No	3.0m	No	Wireless Router	Unterminated
Micro USB	Yes	0.9m	No	Wireless Router	Unterminated

MODIFICATIONS



2017-1-25

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/3/2017	EIRP Part 24E - 2G, 3G	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	4/4/2017	EIRP Part 27 - 3G	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	4/5/2017	ERP Part 22H - 2G, 3G	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	4/7/2017	Out of Band Emissions Part 22H - 2G, 3G	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	4/12/2017	Out of Band Emissions Part 24E - 2G, 3G	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	4/13/2017	Out of Band Emissions Part 27 - 3G	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	4/13/2017	Out of Band Emissions Part 27 - LTE Band 13	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	4/17/2017	EIRP Part 27 - LTE Band 4	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	4/17/2017	ERP Part 27 - LTE Band 13	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	4/18/2017	Out of Band Emissions Part 27 - LTE Band 4	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
11	4/25/2017	ERP Part 22H - LTE Band 5	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
12	4/25/2017	Out of Band Emissions Part 27 - LTE Band 17	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
13	4/25/2017	ERP Part 27 - LTE Band 17	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
14	4/26/2017	EIRP Part 24E - LTE Band 2	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
15	4/26/2017	EIRP Part 24E - LTE Band 25	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
16	4/27/2017	Out of Band Emissions Part 24E - LTE Band 25	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.

MODIFICATIONS



17	4/27/2017	Out of Band Emissions Part 24E - LTE Band 2	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
18	4/28/2017	Out of Band Emissions Part 22H - LTE Band 5	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

CONDUCTED OUTPUT POWER COMPARISON



XMI 2017.01.26

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA18N5WA-30	TLE	10/11/2016	10/11/2017
Directional Coupler	Fairview Microwave	SMC4035-10	IRZ	NCR	NCR
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	NCR
Terminator	Fairview Microwave	STN18N-10	TWM	NCR	NCR
Cable	Micro-Coax	D150A-1-0720-200	EVH	6/7/2016	6/7/2017
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	5/20/2017
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	5/20/2017
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	10/27/2018


TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and an RMS Average Power Meter. The output power was measured with the EUT set to the channel and modes in each band which provided the highest conducted output power of the original test reports for FCC ID: XIA-NTC140W

CONDUCTED OUTPUT POWER COMPARISON



XMI 2017.01.28

EUT: NTC140W01		Work Order: NETC0005	
Serial Number: NTC-140-01 TKA		Date: 03/30/17	
Customer: NetComm Wireless		Temperature: 22.2 °C	
Attendees: None		Humidity: 39.8% RH	
Project: None		Barometric Pres.: 1027 mbar	
Tested by: Brandon Hobbs		Power: 110VAC/60Hz	
		Job Site: EV06	
TEST SPECIFICATIONS			
FCC 22H:2017, FCC 24E:2017, FCC 27:2017		Test Method	
		ANSI/TIA/EIA-603-D-2010	
COMMENTS			
The firmware used was version 05.05.58.00			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Measured (dBm)	Grant Value (dBm)
LTE Band 4		22.6	22.2
LTE Band 13		22.5	22.0
GPRS PCS850		31.8	31.9
GPRS PCS1900		29.5	29.2
WCDMA Band 5		22.9	21.9
WCDMA Band 2		22.4	22.3
		Result (dB)	
			0.3
			0.5
			0.0
			0.3
			1.1
			0.1

OUT OF BAND EMISSIONS PART 22H - 2G, 3G



PSA-ESCI 2017.01.26

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

E-GPRS, GSM-850, MCS-5, 1UP/1DN, Low Ch, 128 = 824.2 MHz, Mid Ch, 190 = 836.6 MHz, High Ch, 251 = 848.8 MHz

GPRS, GSM-850, CS-4, 1UP/1DN, Low Ch, 128 = 824.2 MHz, Mid Ch, 190 = 836.6 MHz, High Ch, 251 = 848.8 MHz

WCDMA, CLR-850, Low Ch, 4132 = 826.5 MHz, Mid Ch, 4182 = 837 MHz, High Ch, 4233 = 846.6 MHz

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	12400 MHz
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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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Dipole	A.H. Systems, Inc.	FCC-4	ADEA	8/23/2016	36 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HFT	1/4/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFB	5/18/2016	12 mo
Attenuator	Coaxicom	3910-10	AWX	5/18/2016	12 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

The transmitter is then replaced with a $\frac{1}{2}$ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) into an ideal $\frac{1}{2}$ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 22H - 2G, 3G

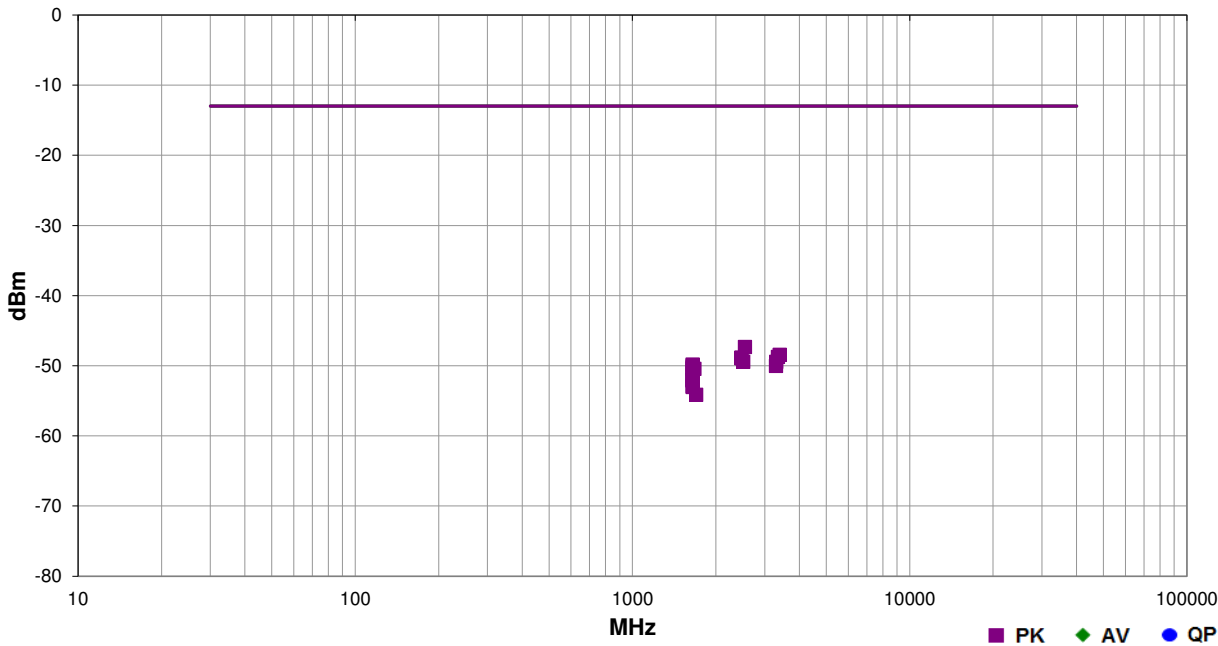


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/07/17	<i>Paul Le Pelouin</i>
Project:	None	Temperature:	22.7 °C	
Job Site:	EV01	Humidity:	38.5% RH	
Serial Number:	8	Barometric Pres.:	991 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting GPRS, GSM-850, CS-4, 1UP/1DN, Low Ch = 824.2 MHz, Mid Ch = 836.6 MHz, High Ch = 848.8 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 22.917:2017	ANSI/TIA/EIA-603-D-2010

Run #	927	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
2546.425	1.6	260.0	Vert	PK	1.85E-08	-47.3	-13.0	-34.3	High Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
3395.642	1.0	248.0	Horz	PK	1.44E-08	-48.4	-13.0	-35.4	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3346.125	1.0	307.0	Horz	PK	1.34E-08	-48.7	-13.0	-35.7	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
2472.675	1.0	274.0	Vert	PK	1.31E-08	-48.8	-13.0	-35.8	Low Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
2472.635	1.0	262.0	Horz	PK	1.28E-08	-48.9	-13.0	-35.9	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3296.970	1.0	228.0	Horz	PK	1.14E-08	-49.4	-13.0	-36.4	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
2509.650	1.0	313.0	Vert	PK	1.14E-08	-49.4	-13.0	-36.4	Mid Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1648.510	1.1	241.0	Vert	PK	1.04E-08	-49.8	-13.0	-36.8	Low Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1648.442	2.0	231.0	Horz	PK	1.02E-08	-49.9	-13.0	-36.9	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3296.208	1.6	267.0	Vert	PK	9.93E-09	-50.0	-13.0	-37.0	Low Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1648.400	1.0	289.0	Horz	PK	9.71E-09	-50.1	-13.0	-37.1	Low Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
1648.467	1.0	164.0	Horz	PK	9.27E-09	-50.3	-13.0	-37.3	Low Ch, EUT Vert, Main Ant On Side, Aux Ant On Side
1648.250	1.0	131.0	Horz	PK	9.06E-09	-50.4	-13.0	-37.4	Low Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
1672.900	1.1	229.0	Vert	PK	9.06E-09	-50.4	-13.0	-37.4	Mid Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1648.483	1.0	215.0	Horz	PK	7.20E-09	-51.4	-13.0	-38.4	Low Ch, EUT Horz, Main Ant Vert, Aux Ant Vert
1648.350	1.0	320.0	Horz	PK	6.41E-09	-51.9	-13.0	-38.9	Low Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1648.410	1.0	166.0	Vert	PK	6.27E-09	-52.0	-13.0	-39.0	Low Ch, EUT Horz, Main Ant Vert, Aux Ant Vert

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1648.425	1.0	292.0	Vert	PK	6.27E-09	-52.0	-13.0	-39.0	Low Ch, EUT Vert, Main Ant On Side, Aux Ant On Side
	1648.490	1.6	181.0	Vert	PK	6.13E-09	-52.1	-13.0	-39.1	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	1648.510	1.1	219.0	Vert	PK	5.09E-09	-52.9	-13.0	-39.9	Low Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
	1648.420	1.0	268.0	Vert	PK	4.98E-09	-53.0	-13.0	-40.0	Low Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
	1697.533	1.0	205.0	Vert	PK	3.86E-09	-54.1	-13.0	-41.1	High Ch, EUT On Side, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 22H - 2G, 3G

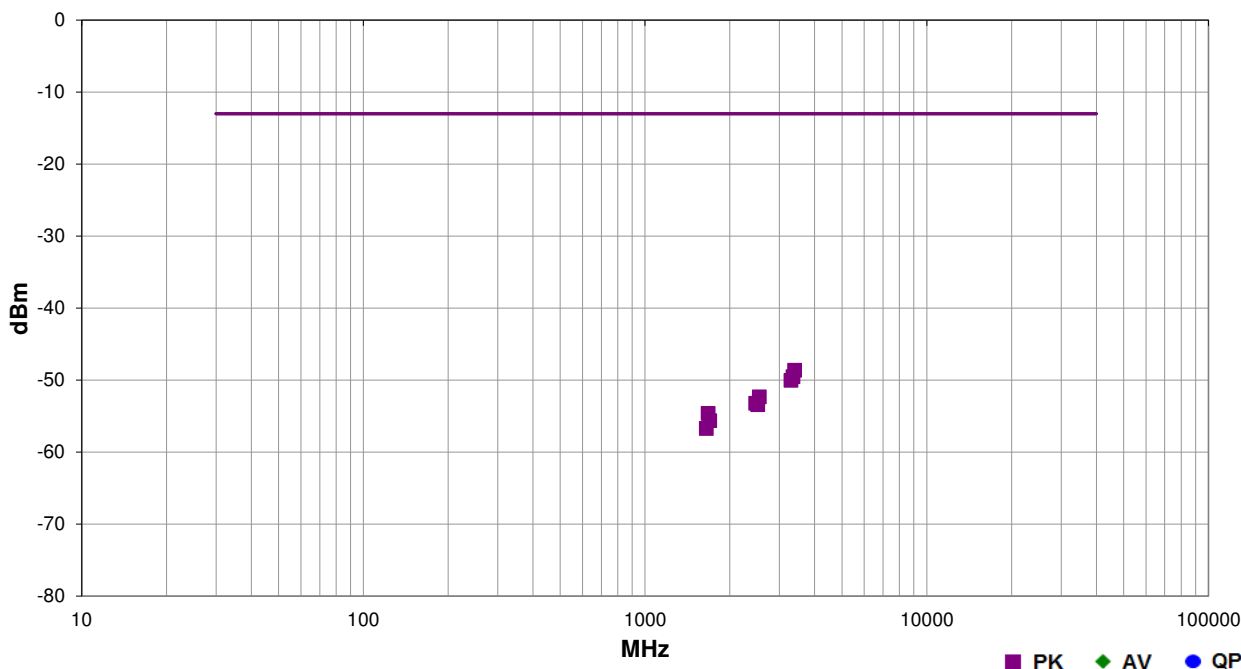


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/07/17	<i>Paul Le Pellego</i>
Project:	None	Temperature:	23.4 °C	
Job Site:	EV01	Humidity:	38.7% RH	
Serial Number:	8	Barometric Pres.:	1010 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting E-GPRS, GSM-850, MCS-5 (8PSK), 1UP/1DN, Low Ch = 824.2 MHz, Mid Ch = 836.6 MHz, High Ch = 848.8 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 22.917:2017	ANSI/TIA/EIA-603-D-2010

Run #	928	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
3395.067	1.0	202.0	Horz	PK	1.37E-08	-48.6	-13.0	-35.6	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3348.283	1.8	322.0	Horz	PK	1.11E-08	-49.5	-13.0	-36.5	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3296.605	1.0	310.0	Horz	PK	9.93E-09	-50.0	-13.0	-37.0	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
2544.717	2.2	149.0	Vert	PK	5.85E-09	-52.3	-13.0	-39.3	High Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
2470.158	1.0	358.0	Vert	PK	4.75E-09	-53.2	-13.0	-40.2	Low Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
2511.375	1.0	68.0	Vert	PK	4.54E-09	-53.4	-13.0	-40.4	Mid Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1673.125	1.0	226.0	Vert	PK	3.44E-09	-54.6	-13.0	-41.6	Mid Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1697.417	1.5	176.0	Vert	PK	2.74E-09	-55.6	-13.0	-42.6	High Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
1648.640	1.4	249.0	Vert	PK	2.12E-09	-56.7	-13.0	-43.7	Low Ch, EUT On Side, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 22H - 2G, 3G

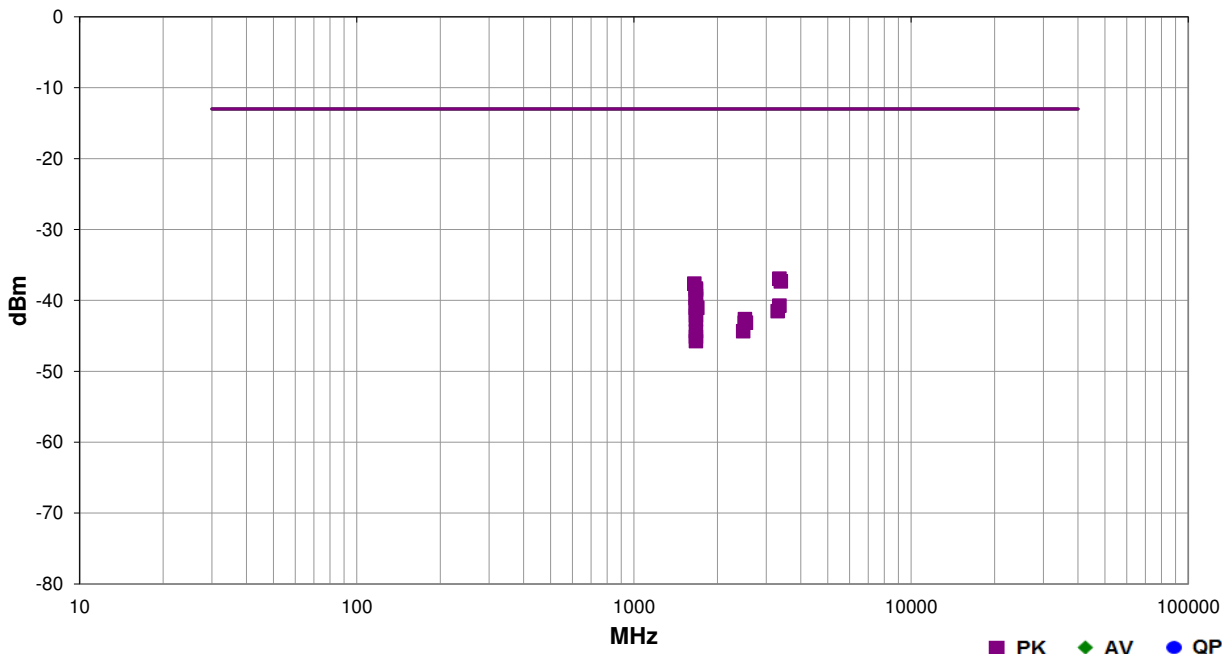


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/07/17	
Project:	None	Temperature:	23.4 °C	
Job Site:	EV01	Humidity:	38.2% RH	
Serial Number:	8	Barometric Pres.:	1000 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting WCDMA, CLR-850, Low Ch = 826.5 MHz, Mid Ch = 837 MHz, High Ch = 846.6 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 22.913:2017	ANSI/TIA/EIA-603-D-2010

Run #	939	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
3347.883	1.0	239.0	Horz	PK	2.03E-07	-36.9	-13.0	-23.9	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3385.800	1.0	255.0	Horz	PK	1.85E-07	-37.3	-13.0	-24.3	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1652.450	1.0	148.0	Horz	PK	1.73E-07	-37.6	-13.0	-24.6	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1673.817	1.0	348.0	Horz	PK	1.47E-07	-38.3	-13.0	-25.3	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1673.183	1.0	135.0	Horz	PK	1.40E-07	-38.5	-13.0	-25.5	Mid Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
1673.467	1.0	297.0	Horz	PK	1.17E-07	-39.3	-13.0	-26.3	Mid Ch, EUT Vert, Main Ant On Side, Aux Ant On Side
1671.617	1.0	160.0	Horz	PK	1.09E-07	-39.6	-13.0	-26.6	Mid Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
1674.717	1.4	204.0	Vert	PK	1.06E-07	-39.7	-13.0	-26.7	Mid Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
3348.033	1.0	187.0	Vert	PK	8.46E-08	-40.7	-13.0	-27.7	Mid Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
1672.483	1.0	258.0	Vert	PK	8.26E-08	-40.8	-13.0	-27.8	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1669.567	1.5	204.0	Vert	PK	7.89E-08	-41.0	-13.0	-28.0	Mid Ch, EUT Vert, Main Ant On Side, Aux Ant On Side
1692.783	1.0	133.0	Horz	PK	7.89E-08	-41.0	-13.0	-28.0	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3301.900	1.0	257.0	Horz	PK	7.03E-08	-41.5	-13.0	-28.5	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1672.867	1.0	260.0	Vert	PK	6.13E-08	-42.1	-13.0	-29.1	Mid Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
2512.867	1.4	333.0	Horz	PK	5.46E-08	-42.6	-13.0	-29.6	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1674.225	1.0	174.0	Horz	PK	5.33E-08	-42.7	-13.0	-29.7	Mid Ch, EUT On Side, Main Ant Vert, Aux Ant Vert

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	2508.200	1.0	276.0	Vert	PK	4.87E-08	-43.1	-13.0	-30.1	Mid Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
	2535.467	1.1	287.0	Horz	PK	4.87E-08	-43.1	-13.0	-30.1	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	1674.170	1.4	208.0	Vert	PK	3.69E-08	-44.3	-13.0	-31.3	Mid Ch, EUT Horz, Main Ant Vert, Aux Ant Vert
	2479.200	1.0	105.0	Horz	PK	3.69E-08	-44.3	-13.0	-31.3	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	1674.440	1.4	211.0	Vert	PK	3.07E-08	-45.1	-13.0	-32.1	Mid Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
	1674.320	1.0	180.0	Horz	PK	2.67E-08	-45.7	-13.0	-32.7	Mid Ch, EUT Horz, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 24E - 2G, 3G



PSA-ESCI 2017.01.26

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

WCDMA, 12.2k. Low Ch, 9262 = 1852.4 MHz, Mid Ch, 9400 = 1880 MHz, and High Ch, 9538 = 1907.6 MHz
 E-GPRS, PCS1900, MCS-5 (8PSK), 1UP/1DN, Low Ch, 512= 1850.2 MHz, Mid Ch,661 = 1880 MHz, and High Ch, 810 = 1909.8 MHz
 GPRS, PCS1900, CS-4, 1UP/1DN. Low Ch, 512 = 1850.2 MHz, Mid Ch, 661 = 1880 MHz, and High Ch, 810 = 1909.8 MHz

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26.5 GHz
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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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	10/17/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	10/17/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-1000/2000-N/N	HFU	1/4/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFO	2/6/2017	12 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	5/18/2016	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

The transmitter is then replaced with a $\frac{1}{2}$ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) into an ideal $\frac{1}{2}$ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 24E - 2G, 3G

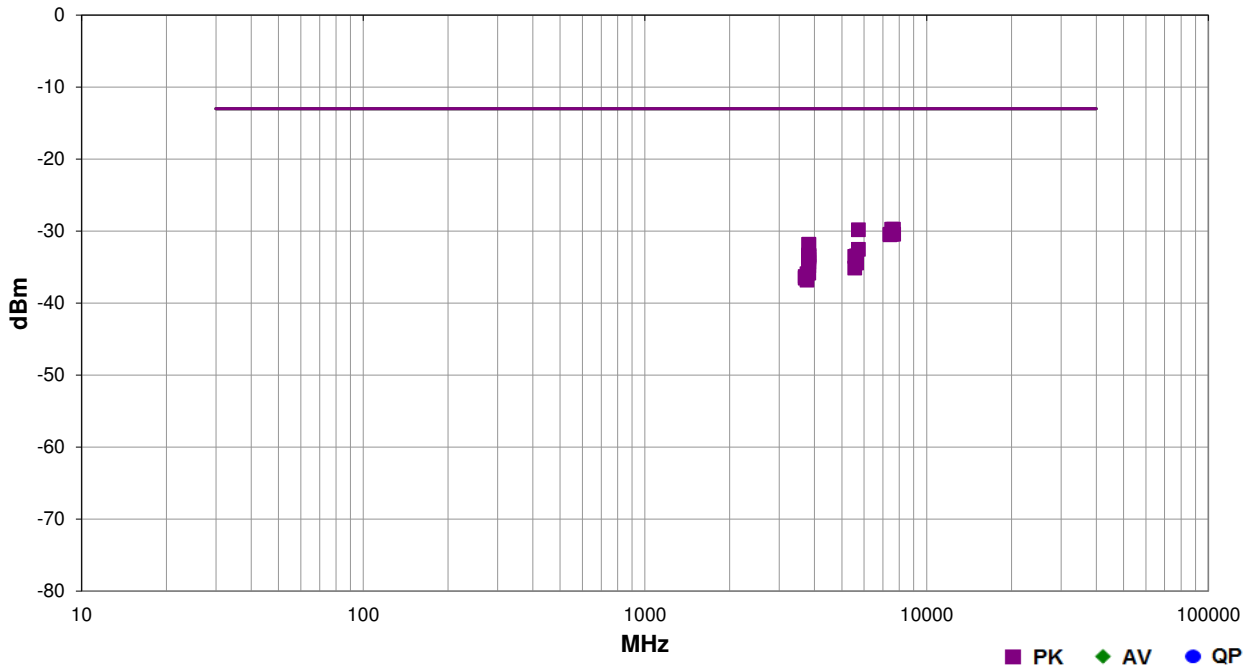


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/12/17	<i>Pauly Le Pelouin</i>
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.2% RH	
Serial Number:	8	Barometric Pres.:	1008 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting WCDMA, 12.2k. Low Ch. = 1852.4 MHz, Mid Ch. = 1880 Mhz, and High Ch. = 1907.6 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT orientation, Main Antenna orientation, and Aux Antenna orientation.			

Test Specifications	FCC 24.238:2017	Test Method	ANSI/TIA/EIA-603-D-2010
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Run #	960	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
7624.000	2.4	221.0	Vert	PK	1.06E-06	-29.7	-13.0	-16.7	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7513.375	1.0	105.0	Vert	PK	1.06E-06	-29.7	-13.0	-16.7	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5724.075	1.0	166.0	Vert	PK	1.04E-06	-29.8	-13.0	-16.8	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7633.925	1.7	351.0	Horz	PK	9.06E-07	-30.4	-13.0	-17.4	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7525.675	1.0	146.0	Horz	PK	9.06E-07	-30.4	-13.0	-17.4	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7413.100	4.0	197.0	Horz	PK	9.06E-07	-30.4	-13.0	-17.4	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7412.625	1.3	260.0	Vert	PK	8.85E-07	-30.5	-13.0	-17.5	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3815.475	1.5	255.0	Horz	PK	6.56E-07	-31.8	-13.0	-18.8	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3815.375	1.3	253.0	Horz	PK	6.56E-07	-31.8	-13.0	-18.8	High Ch, EUT Vert, On Side, Aux Ant On Side
5725.750	1.1	186.0	Horz	PK	5.59E-07	-32.5	-13.0	-19.5	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3814.725	1.7	305.0	Horz	PK	4.65E-07	-33.3	-13.0	-20.3	High Ch, EUT Horz, Main Ant Vert, Aux Ant Vert
3816.125	1.0	180.0	Vert	PK	4.65E-07	-33.3	-13.0	-20.3	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3815.175	1.0	199.0	Vert	PK	4.54E-07	-33.4	-13.0	-20.4	High Ch, EUT Horz, Main Ant Vert, Aux Ant Vert
5640.525	1.0	235.0	Vert	PK	4.54E-07	-33.4	-13.0	-20.4	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
3815.825	1.6	165.0	Horz	PK	4.44E-07	-33.5	-13.0	-20.5	High Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
5557.950	1.0	153.0	Vert	PK	4.44E-07	-33.5	-13.0	-20.5	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3814.050	1.2	203.0	Vert	PK	4.34E-07	-33.6	-13.0	-20.6	High Ch, EUT Horz, On Side, Aux Ant On Side
3815.550	1.0	186.0	Vert	PK	4.14E-07	-33.8	-13.0	-20.8	High Ch, EUT Vert, On Side, Aux Ant On Side
3815.900	1.5	266.0	Horz	PK	4.05E-07	-33.9	-13.0	-20.9	High Ch, EUT Horz, On Side, Aux Ant On Side
3815.925	1.6	227.0	Horz	PK	3.69E-07	-34.3	-13.0	-21.3	High Ch, EUT On Side, On Side, Aux Ant On Side
5638.100	1.0	187.0	Horz	PK	3.61E-07	-34.4	-13.0	-21.4	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3814.900	1.0	300.0	Vert	PK	3.29E-07	-34.8	-13.0	-21.8	High Ch, EUT On Side, Main Ant Vert, Aux Ant Vert
5559.400	1.0	9.0	Horz	PK	3.07E-07	-35.1	-13.0	-22.1	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3814.375	1.0	300.0	Vert	PK	2.61E-07	-35.8	-13.0	-22.8	High Ch, EUT On Side, On Side, Aux Ant On Side
3760.950	1.0	254.0	Vert	PK	2.55E-07	-35.9	-13.0	-22.9	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3704.025	1.0	335.0	Vert	PK	2.33E-07	-36.3	-13.0	-23.3	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3705.325	1.0	240.0	Horz	PK	2.22E-07	-36.5	-13.0	-23.5	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3760.925	1.0	246.0	Horz	PK	2.08E-07	-36.8	-13.0	-23.8	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 24E - 2G, 3G



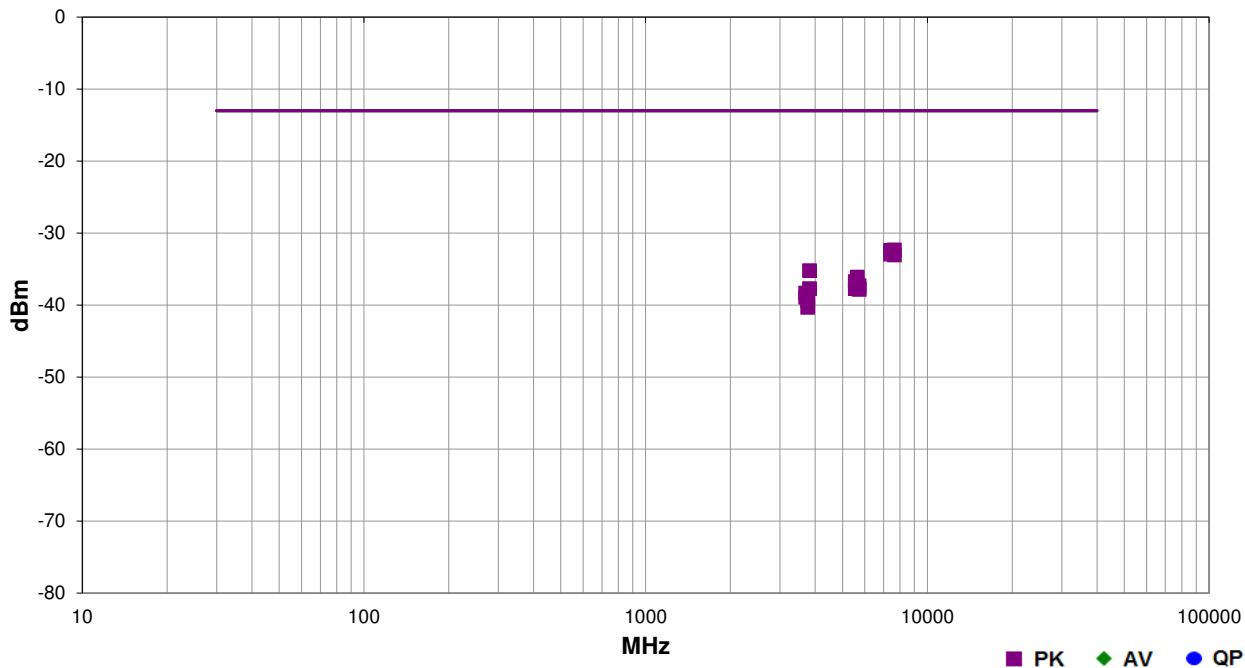
EmiRS 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/12/17	<i>Paul Le Pelouin</i>
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.2% RH	
Serial Number:	8	Barometric Pres.:	1008 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting GPRS, PCS1900, CS-4, 1UP/1DN. Low Ch. = 1850.2 MHz, Mid Ch. = 1880 Mhz, and High Ch. = 1909.8 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT orientation, Main Antenna orientation, and Aux Antenna orientation.			

Test Specifications	FCC 24.238:2017	Test Method	ANSI/TIA/EIA-603-D-2010
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Run #	961	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
7643.533	1.0	216.0	Horz	PK	5.85E-07	-32.3	-13.0	-19.3	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7401.233	1.0	73.0	Vert	PK	5.72E-07	-32.4	-13.0	-19.4	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7517.767	1.0	1.0	Horz	PK	5.72E-07	-32.4	-13.0	-19.4	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7521.183	1.0	7.0	Vert	PK	5.33E-07	-32.7	-13.0	-19.7	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7400.833	1.0	351.0	Horz	PK	5.09E-07	-32.9	-13.0	-19.9	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7642.300	1.0	357.0	Vert	PK	4.98E-07	-33.0	-13.0	-20.0	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3818.883	1.1	27.0	Horz	PK	3.00E-07	-35.2	-13.0	-22.2	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5639.567	1.0	340.0	Vert	PK	2.44E-07	-36.1	-13.0	-23.1	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5550.417	1.0	254.0	Horz	PK	2.12E-07	-36.7	-13.0	-23.7	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5728.533	1.0	339.0	Vert	PK	1.85E-07	-37.3	-13.0	-24.3	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5640.800	1.0	181.0	Horz	PK	1.81E-07	-37.4	-13.0	-24.4	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5550.750	1.0	314.0	Vert	PK	1.69E-07	-37.7	-13.0	-24.7	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3818.933	1.0	339.0	Vert	PK	1.69E-07	-37.7	-13.0	-24.7	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5729.283	1.0	181.0	Horz	PK	1.65E-07	-37.8	-13.0	-24.8	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	3699.550	1.0	77.0	Vert	PK	1.47E-07	-38.3	-13.0	-25.3	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3700.750	1.2	194.0	Horz	PK	1.28E-07	-38.9	-13.0	-25.9	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3759.867	1.0	76.0	Vert	PK	1.14E-07	-39.4	-13.0	-26.4	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3760.017	1.0	168.0	Horz	PK	9.27E-08	-40.3	-13.0	-27.3	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 24E - 2G, 3G



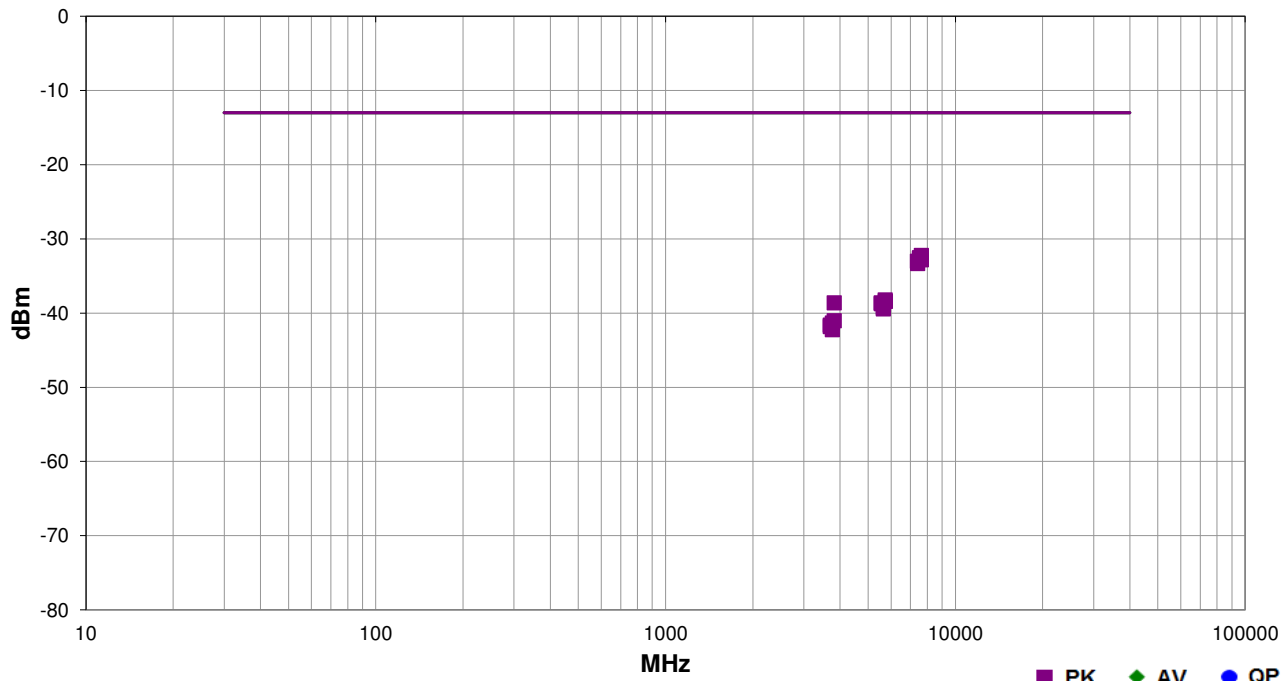
EmiRS 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/12/17	<i>Pauly Le Pellego</i>
Project:	None	Temperature:	22.5 °C	
Job Site:	EV01	Humidity:	41.2% RH	
Serial Number:	8	Barometric Pres.:	1008 mbar	Tested by: Jeff Alcoke and Rod Peloquin
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting E-GPRS, PCS1900, MCS-5 (8PSK), 1UP/1DN, Low Ch= 1850.2 MHz, Mid Ch = 1880 Mhz, and High Ch = 1909.8 MHz			
Deviations:	None			
Comments:	See comments below for Channe, EUT orientation, Main Antenna orientation, and Aux Antenna orientation.			

Test Specifications	FCC 24.238:2017	Test Method	ANSI/TIA/EIA-603-D-2010
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Run #	962	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
7634.450	1.0	113.0	Vert	PK	5.99E-07	-32.2	-13.0	-19.2	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7521.850	1.0	38.0	Vert	PK	5.59E-07	-32.5	-13.0	-19.5	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7518.617	2.9	186.0	Horz	PK	5.46E-07	-32.6	-13.0	-19.6	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7636.217	3.3	56.0	Horz	PK	5.21E-07	-32.8	-13.0	-19.8	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7401.617	1.0	168.0	Vert	PK	4.98E-07	-33.0	-13.0	-20.0	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
7405.067	1.0	166.0	Horz	PK	4.65E-07	-33.3	-13.0	-20.3	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5725.800	1.0	340.0	Vert	PK	1.50E-07	-38.2	-13.0	-25.2	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5730.400	1.4	163.0	Horz	PK	1.44E-07	-38.4	-13.0	-25.4	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
3819.300	1.1	24.0	Horz	PK	1.37E-07	-38.6	-13.0	-25.6	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5550.733	1.0	199.0	Horz	PK	1.37E-07	-38.6	-13.0	-25.6	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
5551.783	1.2	156.0	Vert	PK	1.34E-07	-38.7	-13.0	-25.7	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	5639.283	1.0	344.0	Vert	PK	1.19E-07	-39.2	-13.0	-26.2	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	5639.000	1.0	192.0	Horz	PK	1.14E-07	-39.4	-13.0	-26.4	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3819.533	1.0	340.0	Vert	PK	7.89E-08	-41.0	-13.0	-28.0	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3760.083	1.0	227.0	Vert	PK	7.36E-08	-41.3	-13.0	-28.3	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3699.917	1.0	262.0	Vert	PK	6.87E-08	-41.6	-13.0	-28.6	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3700.300	1.0	242.0	Horz	PK	6.56E-08	-41.8	-13.0	-28.8	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
	3760.317	1.0	167.0	Horz	PK	5.99E-08	-42.2	-13.0	-29.2	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 27 - 3G



PSA-ESCI 2017.01.26

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

WCDMA, R99, 12.2k, AWS-1700. Low Ch, 1312 = 1712.4 MHz, Mid Ch, 1427 = 1735.4 MHz, and High Ch, 1513 = 1752.6 MHz

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26.5 GHz
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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
Universal Radio Communication	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	10/17/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	10/17/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFO	2/6/2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-1000/2000-N/N	HFU	1/4/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	5/18/2016	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

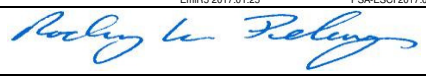
At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

The transmitter is then replaced with a $\frac{1}{2}$ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal $\frac{1}{2}$ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 27 - 3G

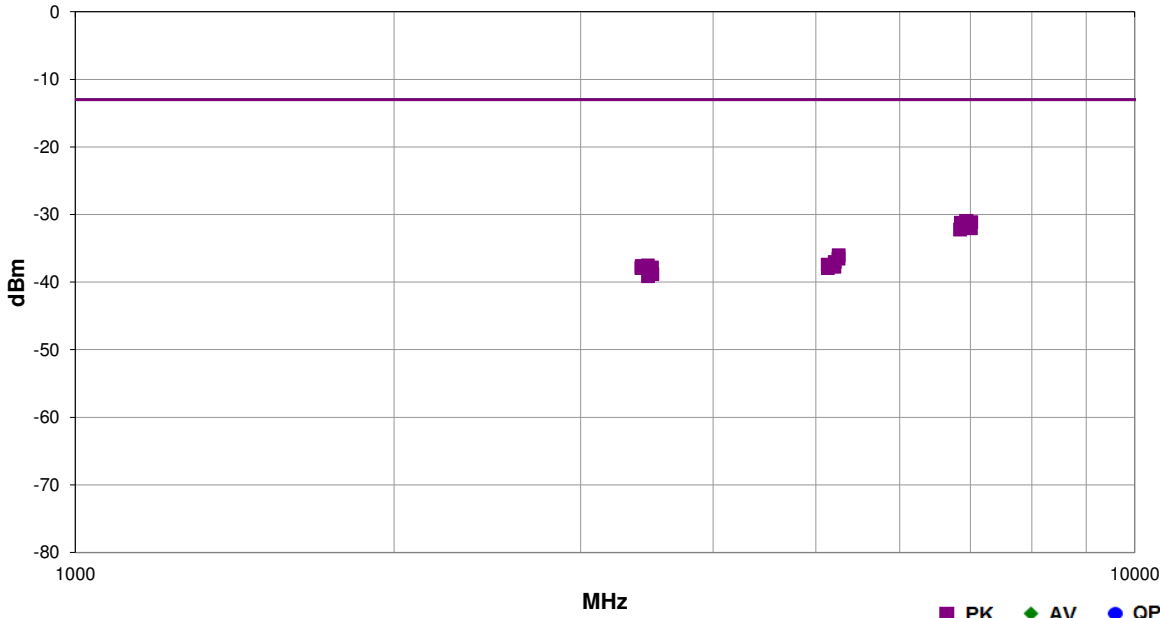


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/13/17	 Tested by: Jeff Alcoke and Rod Pelouquin
Project:	None	Temperature:	22.9 °C	
Job Site:	EV01	Humidity:	36.5% RH	
Serial Number:	8	Barometric Pres.:	1012 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	WCDMA, R99, 12.2k, AWS-1700. Low Ch, 1312 = 1712.4 MHz, Mid Ch, 1427 = 1735.4 MHz, and High Ch, 1513 = 1752.6 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT orientation, Main Antenna orientation, and Aux Antenna orientation.			

Test Specifications	Test Method
FCC 27.53:2017	ANSI/TIA/EIA-603-D-2010

Run #	963	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
6939.200	1.0	84.0	Horz	PK	8.07E-07	-30.9	-13.0	-17.9	Mid Ch. 1735.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
6934.250	1.0	335.0	Vert	PK	8.07E-07	-30.9	-13.0	-17.9	Mid Ch. 1735.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
7012.100	1.0	331.0	Vert	PK	7.71E-07	-31.1	-13.0	-18.1	High Ch. 1752.6 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
6854.400	1.0	335.0	Horz	PK	7.54E-07	-31.2	-13.0	-18.2	Low Ch. 1712.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
7004.775	1.0	179.0	Horz	PK	6.27E-07	-32.0	-13.0	-19.0	High Ch. 1752.6 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
6843.075	1.0	267.0	Vert	PK	5.99E-07	-32.2	-13.0	-19.2	Low Ch. 1712.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
5256.925	3.2	65.0	Vert	PK	2.50E-07	-36.0	-13.0	-23.0	High Ch. 1752.6 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
5253.425	1.0	55.0	Horz	PK	2.22E-07	-36.5	-13.0	-23.5	High Ch. 1752.6 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
5210.550	1.0	102.0	Vert	PK	1.98E-07	-37.0	-13.0	-24.0	Mid Ch. 1735.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
5133.425	1.0	273.0	Horz	PK	1.81E-07	-37.4	-13.0	-24.4	Low Ch. 1712.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
3471.425	1.1	150.0	Horz	PK	1.77E-07	-37.5	-13.0	-24.5	Mid Ch. 1735.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
3425.975	1.0	205.0	Horz	PK	1.73E-07	-37.6	-13.0	-24.6	Low Ch. 1712.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
5206.950	1.0	134.0	Horz	PK	1.69E-07	-37.7	-13.0	-24.7	Mid Ch. 1735.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
3502.575	1.0	127.0	Horz	PK	1.65E-07	-37.8	-13.0	-24.8	High Ch. 1752.6 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
3423.275	1.0	144.0	Vert	PK	1.61E-07	-37.9	-13.0	-24.9	Low Ch. 1712.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
5134.525	1.0	232.0	Vert	PK	1.61E-07	-37.9	-13.0	-24.9	Low Ch. 1712.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
3505.575	1.0	146.0	Vert	PK	1.31E-07	-38.8	-13.0	-25.8	High Ch. 1752.6 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert
3472.725	1.0	160.0	Vert	PK	1.22E-07	-39.1	-13.0	-26.1	Mid Ch. 1735.4 MHz, EUT Vert, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 27 - LTE BAND 4



PSA-ESCI 2017.01.26

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, QPSK/16-QAM

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	19957	1710.7
	Mid	20175	1732.5
	High	20393	1754.3
3 MHz	Low	19965	1711.5
	Mid	20175	1732.5
	High	20385	1753.5
5 MHz	Low	19975	1712.5
	Mid	20175	1732.5
	High	20375	1752.5
10 MHz	Low	20000	1715
	Mid	20175	1732.5
	High	20350	1750
15 MHz	Low	20025	1717.5
	Mid	20175	1732.5
	High	20325	1747.5
20 MHz	Low	20050	1720
	Mid	20175	1732.5
	High	20300	1745

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 26.5 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
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Microwave Amplifier	Amplifier Research	50S1G4A	TRU	NCR	0 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	10/17/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	10/17/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFO	2/6/2017	12 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-1000/2000-N/N	HFU	1/4/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	5/18/2016	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 27 - LTE BAND 4

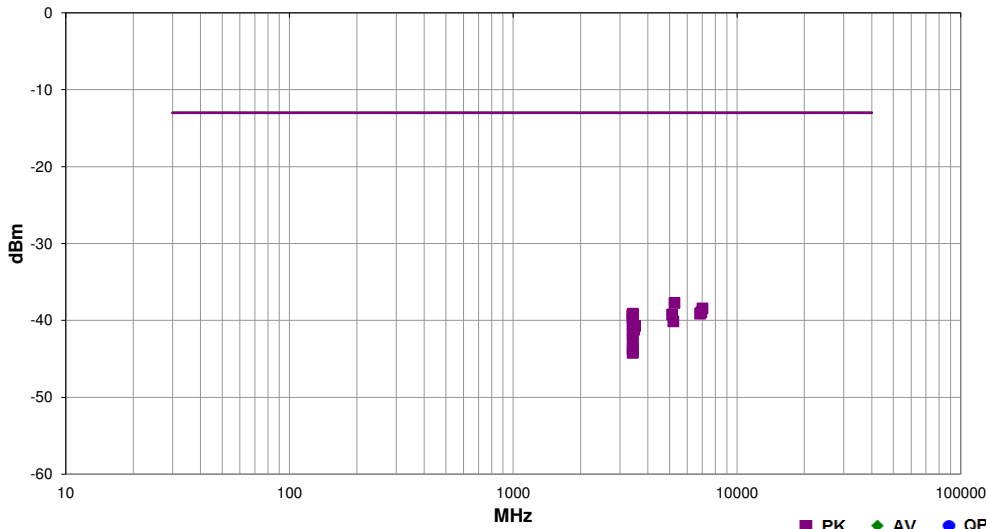


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/18/17	
Project:	None	Temperature:	22.4 °C	
Job Site:	EV01	Humidity:	42.3% RH	
Serial Number:	8	Barometric Pres.:	1017 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting LTE, Band 4, QPSK/16-QAM			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Modulation, Bandwidth, RB setting, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 27.53:2017	ANSI/TIA/EIA-603-D-2010

Run #	999	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
5259.247	1.0	256.0	Horz	PK	1.69E-07	-37.7	-13.0	-24.7	High Ch. 1754.3 MHz, QPSK, 3MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
7011.908	1.0	253.0	Horz	PK	1.44E-07	-38.4	-13.0	-25.4	High Ch. 1754.3 MHz, QPSK, 3MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
6925.350	2.2	200.0	Horz	PK	1.28E-07	-38.9	-13.0	-25.9	Mid Ch. 1732.5 MHz, QPSK, 3 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
6838.623	1.0	191.0	Horz	PK	1.22E-07	-39.1	-13.0	-26.1	Low Ch. 1710.7 MHz, QPSK, 5 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.562	1.0	211.0	Horz	PK	1.22E-07	-39.1	-13.0	-26.1	Low Ch. 1710.7 MHz, QPSK, 3 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3421.670	1.0	209.0	Horz	PK	1.19E-07	-39.2	-13.0	-26.2	Low Ch. 1710.7 MHz, QPSK, 5 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
5128.397	1.0	257.0	Horz	PK	1.19E-07	-39.2	-13.0	-26.2	Low Ch. 1710.7 MHz, QPSK, 5 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.720	1.0	209.0	Horz	PK	1.19E-07	-39.2	-13.0	-26.2	Low Ch. 1710.7 MHz, QPSK, 20 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.312	1.0	210.0	Horz	PK	1.17E-07	-39.3	-13.0	-26.3	Low Ch. 1710.7 MHz, 16-QAM, 3 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3421.028	1.0	208.0	Horz	PK	1.14E-07	-39.4	-13.0	-26.4	Low Ch. 1710.7 MHz, QPSK, 10 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.462	1.0	211.0	Horz	PK	1.14E-07	-39.4	-13.0	-26.4	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.445	1.0	203.0	Horz	PK	1.14E-07	-39.4	-13.0	-26.4	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3422.310	1.0	210.0	Horz	PK	1.09E-07	-39.6	-13.0	-26.6	Low Ch. 1710.7 MHz, QPSK, 15 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3421.578	1.0	211.0	Horz	PK	1.04E-07	-39.8	-13.0	-26.8	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.295	1.3	241.0	Horz	PK	9.93E-08	-40.0	-13.0	-27.0	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
5193.492	1.0	277.0	Horz	PK	9.71E-08	-40.1	-13.0	-27.1	Mid Ch. 1732.5 MHz, QPSK, 3 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3422.433	1.0	210.0	Horz	PK	9.71E-08	-40.1	-13.0	-27.1	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3421.503	1.0	210.0	Horz	PK	8.65E-08	-40.6	-13.0	-27.6	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Max RB, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.520	1.0	303.0	Horz	PK	8.46E-08	-40.7	-13.0	-27.7	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3506.008	1.0	119.0	Horz	PK	8.46E-08	-40.7	-13.0	-27.7	High Ch. 1754.3 MHz, QPSK, 3MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3462.390	1.0	207.0	Horz	PK	7.54E-08	-41.2	-13.0	-28.2	Mid Ch. 1732.5 MHz, QPSK, 3 MHz BW, Offset 0, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.528	1.0	304.0	Horz	PK	7.36E-08	-41.3	-13.0	-28.3	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.437	1.0	144.0	Vert	PK	6.56E-08	-41.8	-13.0	-28.8	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.495	1.0	178.0	Vert	PK	5.85E-08	-42.3	-13.0	-29.3	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.470	1.0	143.0	Vert	PK	5.46E-08	-42.6	-13.0	-29.6	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.395	1.1	142.0	Vert	PK	4.34E-08	-43.6	-13.0	-30.6	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.637	1.0	332.0	Horz	PK	4.14E-08	-43.8	-13.0	-30.8	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.228	1.0	146.0	Vert	PK	3.86E-08	-44.1	-13.0	-31.1	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert
3420.628	1.0	327.0	Vert	PK	3.78E-08	-44.2	-13.0	-31.2	Low Ch. 1710.7 MHz, QPSK, 1.4 MHz BW, Offset 5, EUT Horz, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 24E - LTE BAND 2



PSA-ESCI 2017.01.26

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

Continuous Tx, LTE Band 2

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	18607	1850.7
	Mid	18900	1880
	High	19193	1909.3
3 MHz	Low	18615	1851.5
	Mid	18900	1880
	High	19185	1908.5
5 MHz	Low	18625	1852.5
	Mid	18900	1880
	High	19195	1907.5
10 MHz	Low	18650	1855
	Mid	18900	1880
	High	19150	1905
15 MHz	Low	18675	1857.5
	Mid	18900	1880
	High	19125	1902.5
20 MHz	Low	18700	1860
	Mid	18900	1880
	High	19100	1900

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 26.5 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Attenuator	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	12 mo
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Cable	ESM Cable Corp.	KMKM-72	EYV	10/17/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	10/17/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-1000/2000-N/N	HFU	1/4/2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFO	2/6/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	4/19/2017	12 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

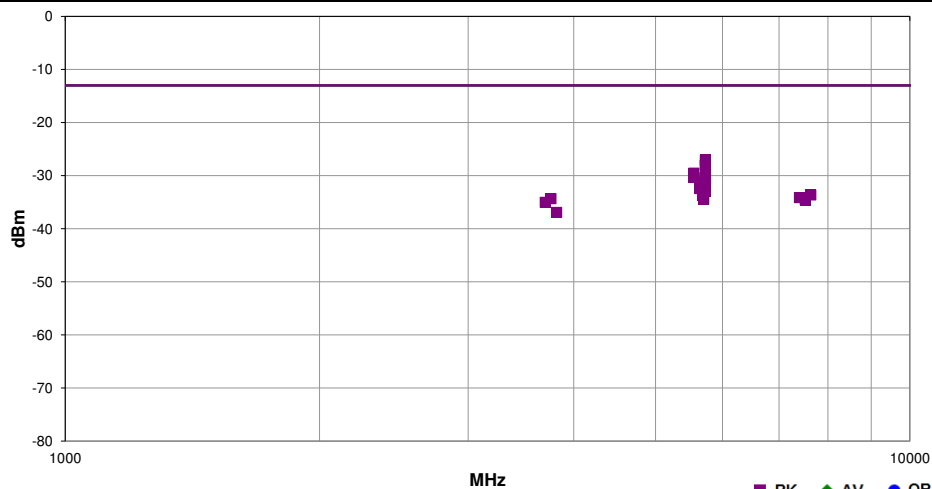
OUT OF BAND EMISSIONS PART 24E - LTE BAND 2



Work Order:	NETC0007	Date:	04/27/17	 <small>EmRS 2017.01.25 PSA-ESCI 2017.01.26</small>
Project:	None	Temperature:	22.4 °C	
Job Site:	EV01	Humidity:	36.7% RH	
Serial Number:	8	Barometric Pres.:	1023 mbar	
EUT:	NTC-140-01			
Configuration:	1			
Customer:	NetComm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continous Tx, LTE Band 2			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Bandwidth, Modulation, RB Size and Offset, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 24.238:2017	ANSI/TIA/EIA-603-D-2010

Run #	29	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
5726.517	1.3	327.0	Horz	PK	1.98E-06	-27.0	-13.0	-14.0	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5726.650	1.0	303.0	Vert	PK	1.94E-06	-27.1	-13.0	-14.1	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
5726.550	1.4	313.0	Vert	PK	1.61E-06	-27.9	-13.0	-14.9	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
5726.458	1.4	315.0	Vert	PK	1.57E-06	-28.0	-13.0	-15.0	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
5550.770	1.4	301.0	Horz	PK	1.11E-06	-29.5	-13.0	-16.5	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5726.750	1.1	256.0	Horz	PK	1.06E-06	-29.7	-13.0	-16.7	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
5726.508	1.1	316.0	Horz	PK	1.02E-06	-29.9	-13.0	-16.9	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
5726.400	1.0	297.0	Vert	PK	9.27E-07	-30.3	-13.0	-17.3	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5550.692	1.1	299.0	Horz	PK	9.27E-07	-30.3	-13.0	-17.3	Low Ch. 18607, 1850.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5722.085	3.6	270.0	Horz	PK	9.06E-07	-30.4	-13.0	-17.4	High Ch. 1902.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5729.323	1.0	319.0	Horz	PK	8.65E-07	-30.6	-13.0	-17.6	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 6 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5726.558	1.1	271.0	Vert	PK	7.71E-07	-31.1	-13.0	-18.1	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Main Ant Vert, Aux Ant Vert
5721.677	1.3	321.0	Horz	PK	7.54E-07	-31.2	-13.0	-18.2	High Ch. 1908.5 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5673.350	1.0	315.0	Horz	PK	7.54E-07	-31.2	-13.0	-18.2	High Ch. 1900 MHz, 20 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5726.692	3.0	109.0	Horz	PK	6.87E-07	-31.6	-13.0	-18.6	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
5726.758	1.0	250.0	Vert	PK	6.72E-07	-31.7	-13.0	-18.7	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
5726.442	1.2	162.0	Horz	PK	6.72E-07	-31.7	-13.0	-18.7	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
5726.558	1.0	49.0	Horz	PK	5.99E-07	-32.2	-13.0	-19.2	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
5638.600	1.0	323.0	Horz	PK	5.72E-07	-32.4	-13.0	-19.4	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5727.892	1.1	319.0	Horz	PK	5.09E-07	-32.9	-13.0	-19.9	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, Max RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
7634.392	1.0	225.0	Horz	PK	4.34E-07	-33.6	-13.0	-20.6	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5687.508	1.0	305.0	Horz	PK	4.24E-07	-33.7	-13.0	-20.7	High Ch. 1902.5 MHz, 15 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
7399.933	1.2	208.0	Horz	PK	3.86E-07	-34.1	-13.0	-21.1	Low Ch. 18607, 1850.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
3759.133	1.9	201.0	Horz	PK	3.69E-07	-34.3	-13.0	-21.3	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5701.883	1.0	329.0	Horz	PK	3.61E-07	-34.4	-13.0	-21.4	High Ch. 1905 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
7518.675	1.0	216.0	Horz	PK	3.44E-07	-34.6	-13.0	-21.6	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
3700.483	1.7	202.0	Horz	PK	3.14E-07	-35.0	-13.0	-22.0	Low Ch. 18607, 1850.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
3817.792	1.1	148.0	Horz	PK	2.03E-07	-36.9	-13.0	-23.9	High Ch. 19193, 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side

OUT OF BAND EMISSIONS PART 22H - LTE BAND 5



PSA-ESCI 2017.01.26

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

Continous Tx, LTE Band 5

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	20407	824.7
	Mid	20525	836.5
	High	20643	848.3
3 MHz	Low	20415	825.5
	Mid	20525	836.5
	High	20635	847.5
5 MHz	Low	20425	826.5
	Mid	20525	836.5
	High	20625	486.5
10 MHz	Low	20450	829
	Mid	20525	836.5
	High	20600	844

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 18 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	12 mo
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Dipole	A.H. Systems, Inc.	FCC-4	ADEA	8/23/2016	36 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50108	HFV	2/6/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HFT	1/4/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFB	4/19/2017	12 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

TEST DESCRIPTION


The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

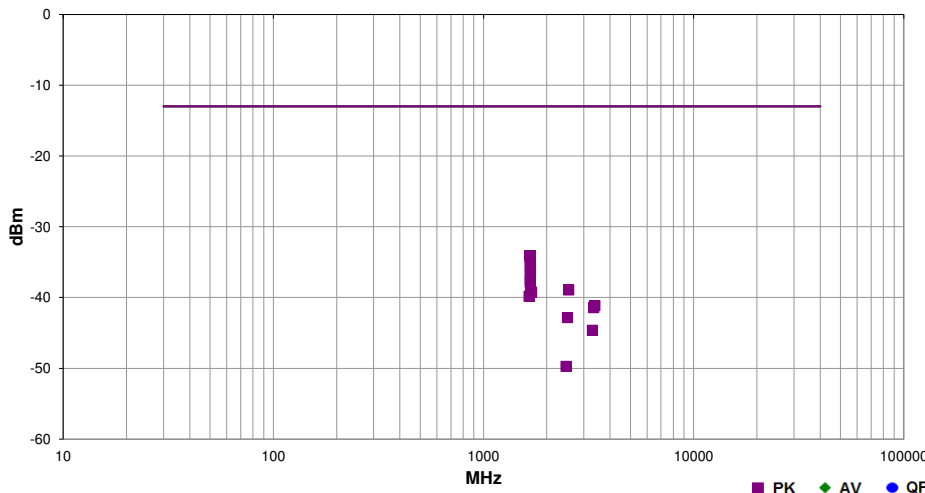
The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 22H - LTE BAND 5



Work Order:	NETC0007	Date:	04/28/17	<small>EmRS 2017.01.25 PSA/ESCI 2017.01.26</small> 
Project:	None	Temperature:	22.1 °C	
Job Site:	EV01	Humidity:	36.2% RH	
Serial Number:	8	Barometric Pres.:	1031 mbar	
EUT:	NTC-140-01			
Configuration:	1			
Customer:	NetComm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 5			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Modulation, Bandwidth, RB and Offset, EUT, Main Antenna, Aux Antenna orientations.			

Test Specifications	Test Method						
FCC 22.917:2017	ANSI/TIA/EIA-603-D-2010						
Run #	57	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
1672.008	1.0	242.0	Horz	PK	3.86E-07	-34.1	-13.0	-21.1	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1664.150	1.0	142.0	Horz	PK	3.86E-07	-34.1	-13.0	-21.1	Mid Ch. 836.5 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1671.992	1.0	139.0	Horz	PK	3.61E-07	-34.4	-13.0	-21.4	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
1668.625	1.0	141.0	Horz	PK	3.52E-07	-34.5	-13.0	-21.5	Mid Ch. 836.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1672.092	1.4	206.0	Vert	PK	3.00E-07	-35.2	-13.0	-22.2	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1671.983	1.0	147.0	Horz	PK	2.80E-07	-35.5	-13.0	-22.5	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1672.142	1.0	141.0	Horz	PK	2.74E-07	-35.6	-13.0	-22.6	Mid Ch. 836.5 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1672.058	1.1	294.0	Vert	PK	2.61E-07	-35.8	-13.0	-22.8	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
1671.967	1.0	137.0	Horz	PK	2.50E-07	-36.0	-13.0	-23.0	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
1673.892	1.0	143.0	Horz	PK	2.50E-07	-36.0	-13.0	-23.0	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 5 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1671.992	1.5	185.0	Vert	PK	2.44E-07	-36.1	-13.0	-23.1	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
1672.950	1.0	144.0	Horz	PK	2.17E-07	-36.6	-13.0	-23.6	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, Max RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1672.075	1.0	139.0	Horz	PK	1.98E-07	-37.0	-13.0	-24.0	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1672.050	1.0	163.0	Vert	PK	1.81E-07	-37.4	-13.0	-24.4	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1672.025	1.0	204.0	Vert	PK	1.81E-07	-37.4	-13.0	-24.4	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1672.175	1.0	157.0	Horz	PK	1.73E-07	-37.6	-13.0	-24.6	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1670.358	1.0	160.0	Horz	PK	1.65E-07	-37.8	-13.0	-24.8	Mid Ch. 836.5 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1671.983	1.1	307.0	Vert	PK	1.34E-07	-38.7	-13.0	-25.7	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2543.617	2.3	21.0	Horz	PK	1.28E-07	-38.9	-13.0	-25.9	High Ch. 848.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1695.633	1.0	249.0	Horz	PK	1.19E-07	-39.2	-13.0	-26.2	High Ch. 848.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1648.575	1.0	144.0	Horz	PK	1.04E-07	-39.8	-13.0	-26.8	Low Ch. 824.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
3391.533	1.0	249.0	Horz	PK	7.71E-08	-41.1	-13.0	-28.1	High Ch. 848.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
3344.200	1.0	243.0	Horz	PK	7.20E-08	-41.4	-13.0	-28.4	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
2508.092	1.0	49.0	Horz	PK	5.21E-08	-42.8	-13.0	-29.8	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
3297.192	1.0	247.0	Horz	PK	3.44E-08	-44.6	-13.0	-31.6	Low Ch. 824.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
2472.608	1.0	119.0	Horz	PK	1.06E-08	-49.7	-13.0	-36.7	Low Ch. 824.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side

OUT OF BAND EMISSIONS PART 27 - LTE BAND 13



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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

Continuous Tx, LTE Band 13, 1RB

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
5 MHz	Low	23205	779.5
	Mid	23230	782
	High	23255	784.5
10 MHz	Mid	23230	782

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 12.4 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
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HFT	1/4/2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50108	HFV	2/6/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFB	5/18/2016	12 mo
Attenuator	Coaxicom	3910-10	AWX	5/18/2016	12 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 27 - LTE BAND 13

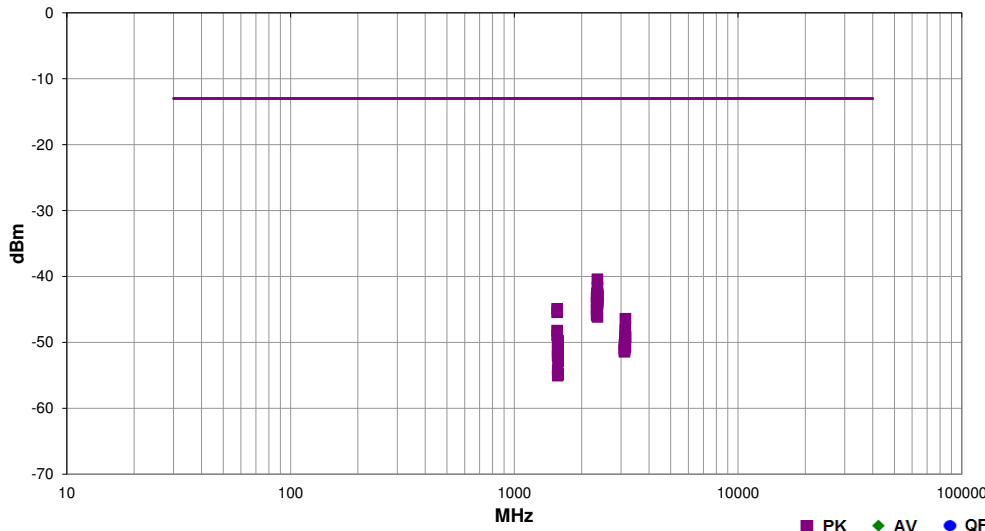


EmIRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/13/17	
Project:	None	Temperature:	23.2 °C	
Job Site:	EV01	Humidity:	36.9% RH	
Serial Number:	8	Barometric Pres.:	1014 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 13, 1RB			
Deviations:	None			
Comments:	See comments below for Channel, Modulation type, Bandwidth, RB size and offset, EUT, Main Antenna and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 27.53:2017	ANSI/TIA/EIA-603-D-2010

Run #	977	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
2353.492	1.3	161.0	Vert	PK	9.06E-08	-40.4	-13.0	-27.4	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.650	1.3	162.0	Vert	PK	6.87E-08	-41.6	-13.0	-28.6	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Horz, Main Ant Vert, Aux Ant Vert
2353.458	1.3	194.0	Vert	PK	5.59E-08	-42.5	-13.0	-29.5	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT On Side, Main Ant Vert, Aux Ant Vert
2346.000	1.3	153.0	Vert	PK	5.59E-08	-42.5	-13.0	-29.5	Mid Ch. 782 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.508	1.7	151.0	Vert	PK	5.33E-08	-42.7	-13.0	-29.7	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Horz, Main Ant On Side, Aux Ant On Side
2353.475	1.3	176.0	Horz	PK	5.21E-08	-42.8	-13.0	-29.8	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.475	1.3	178.0	Vert	PK	4.98E-08	-43.0	-13.0	-30.0	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT On Side, Main Ant On Side, Aux Ant On Side
2353.500	1.3	173.0	Horz	PK	4.98E-08	-43.0	-13.0	-30.0	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant On Side, Aux Ant On Side
2353.417	1.0	267.0	Horz	PK	4.87E-08	-43.1	-13.0	-30.1	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Horz, Main Ant On Side, Aux Ant On Side
2332.100	1.3	180.0	Vert	PK	4.87E-08	-43.1	-13.0	-30.1	Low Ch. 779.5 MHz, 16-QAM, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.392	1.3	223.0	Horz	PK	4.65E-08	-43.3	-13.0	-30.3	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT On Side, Main Ant Vert, Aux Ant Vert
2346.058	1.0	87.0	Horz	PK	4.44E-08	-43.5	-13.0	-30.5	Mid Ch. 782 MHz, 16-QAM, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.575	1.0	113.0	Horz	PK	4.34E-08	-43.6	-13.0	-30.6	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.608	1.3	186.0	Vert	PK	4.24E-08	-43.7	-13.0	-30.7	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant On Side, Aux Ant On Side
2346.083	1.0	175.0	Horz	PK	4.24E-08	-43.7	-13.0	-30.7	Mid Ch. 782 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.608	1.2	224.0	Horz	PK	4.05E-08	-43.9	-13.0	-30.9	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Horz, Main Ant Vert, Aux Ant Vert
2332.117	1.0	207.0	Horz	PK	4.05E-08	-43.9	-13.0	-30.9	Low Ch. 779.5 MHz, 16-QAM, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2345.900	1.0	103.0	Vert	PK	4.05E-08	-43.9	-13.0	-30.9	Mid Ch. 782 MHz, 16-QAM, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2345.767	1.0	88.0	Horz	PK	4.05E-08	-43.9	-13.0	-30.9	Mid Ch. 782 MHz, 16-QAM, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.575	1.0	175.0	Horz	PK	3.86E-08	-44.1	-13.0	-31.1	High Ch. 785.5 MHz, 16-QAM, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.392	1.0	266.0	Horz	PK	3.69E-08	-44.3	-13.0	-31.3	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT On Side, Main Ant On Side, Aux Ant On Side
2345.717	1.0	156.0	Vert	PK	3.69E-08	-44.3	-13.0	-31.3	Mid Ch. 782 MHz, 16-QAM, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2345.675	1.0	156.0	Vert	PK	3.37E-08	-44.7	-13.0	-31.7	Mid Ch. 782 MHz, QPSK, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1554.458	1.0	201.0	Horz	PK	3.21E-08	-44.9	-13.0	-31.9	Low Ch. 779.5 MHz, 16-QAM, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2332.108	1.3	180.0	Vert	PK	3.14E-08	-45.0	-13.0	-32.0	Mid Ch. 779.5 MHz, QPSK, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1554.583	1.0	201.0	Horz	PK	2.86E-08	-45.4	-13.0	-32.4	Low Ch. 779.5 MHz, QPSK, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2345.633	1.0	88.0	Horz	PK	2.67E-08	-45.7	-13.0	-32.7	Mid Ch. 782 MHz, QPSK, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2331.933	1.0	207.0	Horz	PK	2.61E-08	-45.8	-13.0	-32.8	Low Ch. 779.5 MHz, QPSK, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
2353.425	1.0	161.0	Vert	PK	2.44E-08	-46.1	-13.0	-33.1	High Ch. 785.5 MHz, 16-QAM, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
3138.100	1.4	111.0	Horz	PK	2.28E-08	-46.4	-13.0	-33.4	High Ch. 785.5 MHz, 16-QAM, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
3127.942	1.0	205.0	Vert	PK	1.54E-08	-48.1	-13.0	-35.1	Mid Ch. 782 MHz, 16-QAM, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1554.658	1.0	37.0	Vert	PK	1.50E-08	-48.2	-13.0	-35.2	Low Ch. 779.5 MHz, 16-QAM, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1554.892	1.0	37.0	Vert	PK	1.28E-08	-48.9	-13.0	-35.9	Low Ch. 779.5 MHz, QPSK, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
3137.792	1.0	207.0	Vert	PK	1.25E-08	-49.0	-13.0	-36.0	High Ch. 785.5 MHz, 16-QAM, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
3138.117	1.4	110.0	Horz	PK	1.19E-08	-49.2	-13.0	-36.2	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
3128.158	1.0	220.0	Horz	PK	1.19E-08	-49.2	-13.0	-36.2	Mid Ch. 782 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1564.033	1.0	202.0	Horz	PK	1.06E-08	-49.7	-13.0	-36.7	Mid Ch. 782 MHz, 16-QAM, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	1568.717	1.0	205.0	Horz	PK	1.04E-08	-49.8	-13.0	-36.8	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3127.975	1.0	208.0	Horz	PK	1.04E-08	-49.8	-13.0	-36.8	Mid Ch. 782 MHz, QPSK, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1564.083	1.0	202.0	Horz	PK	9.71E-09	-50.1	-13.0	-37.1	Mid Ch. 782 MHz, 16-QAM, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3128.358	1.0	217.0	Horz	PK	9.71E-09	-50.1	-13.0	-37.1	Mid Ch. 782 MHz, 16-QAM, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3127.475	1.0	185.0	Vert	PK	9.71E-09	-50.1	-13.0	-37.1	Mid Ch. 782 MHz, 16-QAM, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3109.550	1.0	207.0	Vert	PK	9.27E-09	-50.3	-13.0	-37.3	Low Ch. 779.5 MHz, QPSK, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3127.833	1.0	208.0	Horz	PK	9.27E-09	-50.3	-13.0	-37.3	Mid Ch. 782 MHz, 16-QAM, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3127.467	1.0	185.0	Vert	PK	9.27E-09	-50.3	-13.0	-37.3	Mid Ch. 782 MHz, QPSK, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1569.083	1.0	202.0	Horz	PK	8.85E-09	-50.5	-13.0	-37.5	High Ch. 785.5 MHz, 16-QAM, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3139.283	1.0	207.0	Vert	PK	8.65E-09	-50.6	-13.0	-37.6	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3127.800	1.0	216.0	Vert	PK	8.46E-09	-50.7	-13.0	-37.7	Mid Ch. 782 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3108.175	1.0	110.0	Horz	PK	8.07E-09	-50.9	-13.0	-37.9	Low Ch. 779.5 MHz, QPSK, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3106.933	1.0	207.0	Vert	PK	7.71E-09	-51.1	-13.0	-38.1	Low Ch. 779.5 MHz, 16-QAM, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1563.592	1.0	199.0	Horz	PK	7.54E-09	-51.2	-13.0	-38.2	Mid Ch. 782 MHz, 16-QAM, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	3108.425	1.0	110.0	Horz	PK	7.20E-09	-51.4	-13.0	-38.4	Low Ch. 779.5 MHz, 16-QAM, 5 MHz BW, 1RB, 0 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1563.883	1.0	199.0	Horz	PK	7.03E-09	-51.5	-13.0	-38.5	Mid Ch. 782 MHz, QPSK, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1563.900	1.4	175.0	Vert	PK	6.27E-09	-52.0	-13.0	-39.0	Mid Ch. 782 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1564.067	1.4	175.0	Vert	PK	6.27E-09	-52.0	-13.0	-39.0	Mid Ch. 782 MHz, 16-QAM, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1569.342	1.0	35.0	Vert	PK	5.21E-09	-52.8	-13.0	-39.8	High Ch. 785.5 MHz, 16-QAM, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1563.817	1.6	38.0	Vert	PK	3.78E-09	-54.2	-13.0	-41.2	Mid Ch. 782 MHz, QPSK, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1569.217	3.2	40.0	Vert	PK	3.29E-09	-54.8	-13.0	-41.8	High Ch. 785.5 MHz, QPSK, 5 MHz BW, 1RB, 12 offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1564.358	1.6	38.0	Vert	PK	3.14E-09	-55.0	-13.0	-42.0	Mid Ch. 782 MHz, 16-QAM, 10 MHz BW, 1RB, 24 offset, EUT Vert, Main Ant Vert, Aux Ant Vert

OUT OF BAND EMISSIONS PART 27 - LTE BAND 17



PSA-ESCI 2017.01.26

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

Continuous Tx, LTE Band 17

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
5 MHz	Low	23755	706.5
	Mid	23790	710
	High	23825	713.5
10 MHz	Low	23780	709
	Mid	23780	710
	High	23780	711

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 18 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	12 mo
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Dipole	A.H. Systems, Inc.	FCC-4	ADEA	8/23/2016	36 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50108	HFV	2/6/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HFT	1/4/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50003	LFB	4/19/2017	12 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 27 - LTE BAND 17

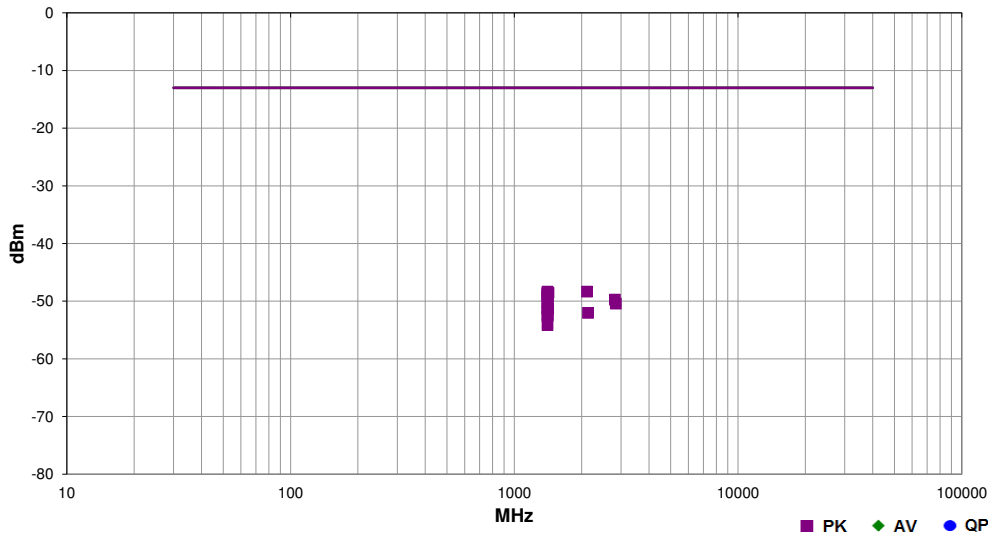


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0007	Date:	04/25/17	<i>Rocky Le Pelouin</i>
Project:	None	Temperature:	21.8 °C	
Job Site:	EV01	Humidity:	42.8% RH	
Serial Number:	8	Barometric Pres.:	1013 mbar	Tested by: Jeff Alcock and Rod Pelouin
EUT:	NTC-140-01			
Configuration:	1			
Customer:	NetComm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 17			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Bandwidth, Modulation, Resource Block size and offset, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 27.53:2017	ANSI/TIA/EIA-603-D-2010

Run #	9	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1408.605	1.1	133.0	Horz	PK	1.47E-08	-48.3	-13.0	-35.3	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
2112.922	1.0	42.0	Horz	PK	1.47E-08	-48.3	-13.0	-35.3	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1408.757	1.0	128.0	Horz	PK	1.40E-08	-48.5	-13.0	-35.5	Low Ch. 706.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1422.513	1.0	127.0	Horz	PK	1.40E-08	-48.5	-13.0	-35.5	High Ch. 713.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1408.725	1.2	112.0	Horz	PK	1.37E-08	-48.6	-13.0	-35.6	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
1408.620	1.2	123.0	Horz	PK	1.31E-08	-48.8	-13.0	-35.8	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1408.615	1.2	124.0	Horz	PK	1.22E-08	-49.1	-13.0	-36.1	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
1409.188	1.0	128.0	Horz	PK	1.19E-08	-49.2	-13.0	-36.2	Low Ch. 709 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
1408.850	1.2	105.0	Horz	PK	1.17E-08	-49.3	-13.0	-36.3	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
2817.423	1.0	33.0	Horz	PK	1.06E-08	-49.7	-13.0	-36.7	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1408.715	1.3	159.0	Vert	PK	9.06E-09	-50.4	-13.0	-37.4	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1408.595	1.2	193.0	Horz	PK	9.06E-09	-50.4	-13.0	-37.4	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
2845.307	1.0	43.0	Horz	PK	9.06E-09	-50.4	-13.0	-37.4	High Ch. 713.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1408.585	1.0	62.0	Vert	PK	7.54E-09	-51.2	-13.0	-38.2	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1408.745	1.7	161.0	Vert	PK	7.36E-09	-51.3	-13.0	-38.3	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1417.392	1.0	129.0	Horz	PK	7.36E-09	-51.3	-13.0	-38.3	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 24 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
2134.353	2.0	359.0	Horz	PK	6.27E-09	-52.0	-13.0	-39.0	High Ch. 713.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1408.470	1.3	143.0	Vert	PK	5.85E-09	-52.3	-13.0	-39.3	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
1410.690	1.0	131.0	Horz	PK	5.72E-09	-52.4	-13.0	-39.4	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, Max RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
1408.700	2.4	196.0	Vert	PK	5.46E-09	-52.6	-13.0	-39.6	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
1408.585	2.8	35.0	Vert	PK	3.86E-09	-54.1	-13.0	-41.1	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side

OUT OF BAND EMISSIONS PART 24E - LTE BAND 25



PSA-ESCI 2017.01.26

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

Continous Tx, LTE Band 25

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	26047	1850.7
	Mid	26340	1880
	High	26683	1914.3
3 MHz	Low	26055	1851.5
	Mid	26340	1880
	High	26675	1913.5
5 MHz	Low	26065	1852.5
	Mid	26340	1880
	High	26665	1912.5
10 MHz	Low	26090	1855
	Mid	26340	1880
	High	26640	1910
15 MHz	Low	26115	1857.5
	Mid	26340	1880
	High	26615	1907.5
20 MHz	Low	26140	1860
	Mid	26340	1880
	High	26590	1905

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 26.5 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Attenuator	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	12 mo
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	10/17/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	10/17/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/6/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Cable	None	Standard Gain Horns Cable	EVF	2/6/2017	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	2/7/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-1000/2000-N/N	HFU	1/4/2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HFO	2/6/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	4/19/2017	12 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted.

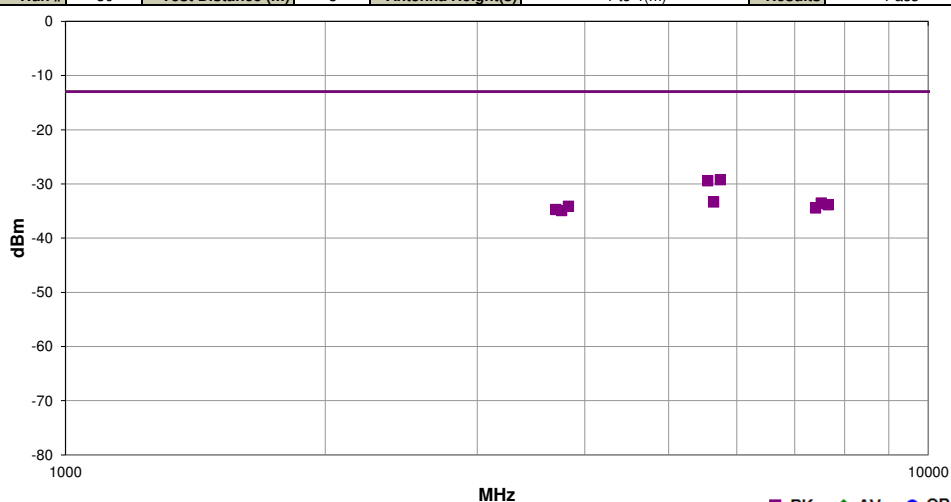
The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

OUT OF BAND EMISSIONS PART 24E - LTE BAND 25



Work Order:	NETC0007	Date:	04/27/17	<i>Rocky Le Pelouin</i> <small>EmPS 2017.01.25 PSA-ESCI 2017.01.26</small>
Project:	None	Temperature:	22.4 °C	
Job Site:	EV01	Humidity:	36.7% RH	
Serial Number:	8	Barometric Pres.:	1023 mbar	
EUT:	NTC-140-01	Tested by: Jeff Alcock and Rod Pelouin		
Configuration:	1			
Customer:	NetComm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 25			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Bandwidth, Modulation, RB Size and Offset, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	FCC 24.238:2017	Test Method	ANSI/TIA/EIA-603-D-2010				
Run #	30	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
5741.492	1.0	318.0	Horz	PK	1.19E-06	-29.2	-13.0	-16.2	High Ch. 1914.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5550.917	1.0	300.0	Horz	PK	1.14E-06	-29.4	-13.0	-16.4	Low Ch. 1850.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
5638.825	1.0	324.0	Horz	PK	4.65E-07	-33.3	-13.0	-20.3	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
7516.433	1.0	288.0	Horz	PK	4.44E-07	-33.5	-13.0	-20.5	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
7656.883	1.0	53.0	Horz	PK	4.14E-07	-33.8	-13.0	-20.8	High Ch. 1914.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
3827.692	1.6	197.0	Horz	PK	3.86E-07	-34.1	-13.0	-21.1	High Ch. 1914.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
7402.092	1.0	45.0	Horz	PK	3.61E-07	-34.4	-13.0	-21.4	Low Ch. 1850.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
3700.425	1.7	203.0	Horz	PK	3.37E-07	-34.7	-13.0	-21.7	Low Ch. 1850.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
3759.075	1.4	199.0	Horz	PK	3.21E-07	-34.9	-13.0	-21.9	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side

ERP PART 22H - 2G, 3G



PSA-ESCI 2017.01.26

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, GSM-850, CS-4, 1UP/1DN, Low Ch, 128 = 824.2 MHz, Mid Ch, 190 = 836.6 MHz, High Ch, 251 = 848.8 MHz
Transmitting E-GPRS, GSM-850, MCS-5 (8PSK), 1UP/1DN, Low Ch, 128 = 824.2 MHz, Mid Ch, 190 = 836.6 MHz, High Ch, 251 = 848.8 MHz
Transmitting WCDMA, CLR-850, Low Ch, 4132 = 826.5 MHz, Mid Ch, 4182 = 837 MHz, High Ch, 4233 = 846.6 MHz

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency | 824.2 MHz | Stop Frequency | 848.8 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Generator - Signal	Rohde & Schwarz	SML01	TFV	11/9/2015	36 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Antenna - Dipole	A.H. Systems, Inc.	FCC-4	ADEA	8/23/2016	36 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

TEST DESCRIPTION

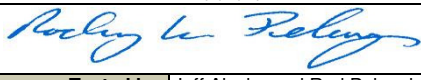
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest 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



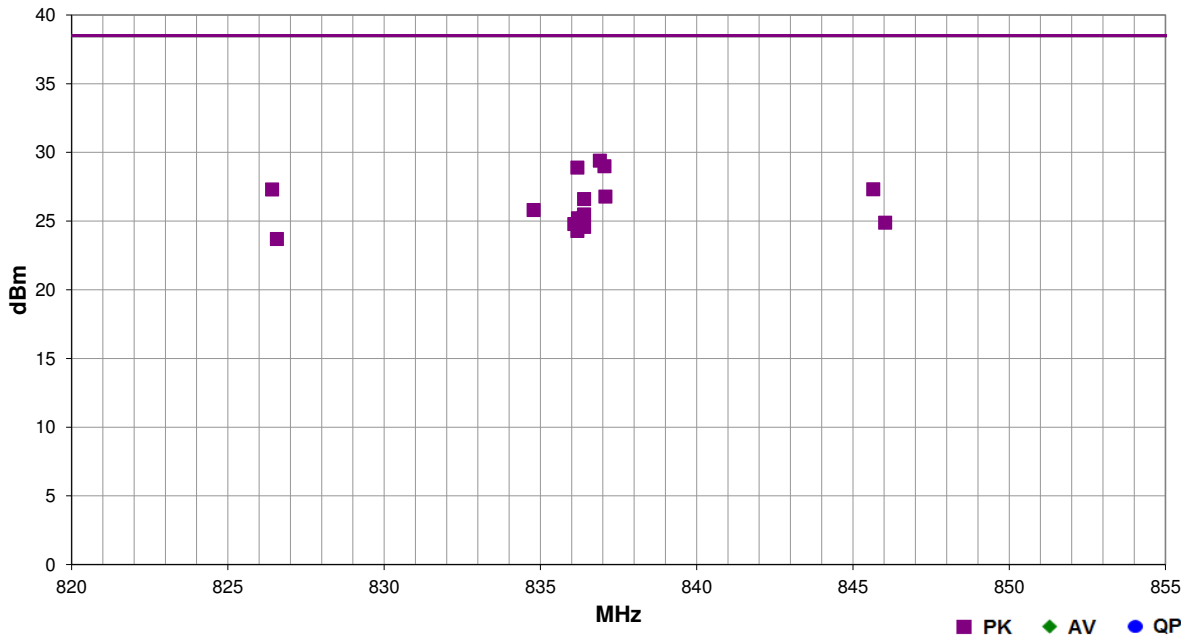
EmiRS 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/05/17	
Project:	None	Temperature:	21.7 °C	
Job Site:	EV01	Humidity:	39.8% RH	
Serial Number:	8	Barometric Pres.:	1016 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting WCDMA, CLR-850, Low Ch = 826.5 MHz, Mid Ch = 837 MHz, High Ch = 846.6 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 22.913:2017	ANSI/TIA/EIA-603-D-2010

Run #	901	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
836.900	1.0	225.0	Vert	PK	8.71E-01	29.4	38.5	-9.1	Mid Ch, EUT Vert, Main Ant On Side, Aux Ant On Side
837.050	1.0	285.0	Vert	PK	7.93E-01	29.0	38.5	-9.5	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
836.183	1.0	317.0	Vert	PK	7.76E-01	28.9	38.5	-9.6	Mid Ch, EUT Horz, Main Ant Vert, Aux Ant Vert
826.417	1.2	352.0	Horz	PK	5.37E-01	27.3	38.5	-11.2	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
845.650	1.0	224.0	Vert	PK	5.38E-01	27.3	38.5	-11.2	High Ch, EUT Vert, Main Ant On Side, Aux Ant On Side
837.083	1.0	259.0	Vert	PK	4.78E-01	26.8	38.5	-11.7	Mid Ch, EUT on side, Main Ant Vert, Aux Ant Vert
836.400	1.0	224.0	Vert	PK	4.57E-01	26.6	38.5	-11.9	Mid Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
834.783	1.1	349.0	Horz	PK	3.80E-01	25.8	38.5	-12.7	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
836.400	1.1	271.0	Horz	PK	3.53E-01	25.5	38.5	-13.0	Mid Ch, EUT on side, Main Ant On Side, Aux Ant On Side
836.383	1.2	38.0	PK	3.37E-01	25.3	38.5	-13.2	Mid Ch, EUT Vert, Main Ant on side, Aux Ant on side	
836.200	1.0	227.0	Vert	PK	3.31E-01	25.2	38.5	-13.3	Mid Ch, EUT on side, Main Ant On Side, Aux Ant On Side
846.033	1.1	344.0	Horz	PK	3.08E-01	24.9	38.5	-13.6	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
836.083	1.1	343.0	Horz	PK	3.01E-01	24.8	38.5	-13.7	Mid Ch, EUT on side, Main Ant Vert, Aux Ant Vert
836.400	1.1	265.0	Horz	PK	2.87E-01	24.6	38.5	-13.9	Mid Ch, EUT Horz, Main Ant On Side, Aux Ant On Side
836.183	1.0	330.0	Horz	PK	2.68E-01	24.3	38.5	-14.2	Mid Ch, EUT Horz, Main Ant Vert, Aux Ant Vert
826.567	1.0	229.0	Vert	PK	2.34E-01	23.7	38.5	-14.8	Low Ch, EUT Vert, Main Ant On Side, Aux Ant On Side

ERP PART 22H - 2G, 3G



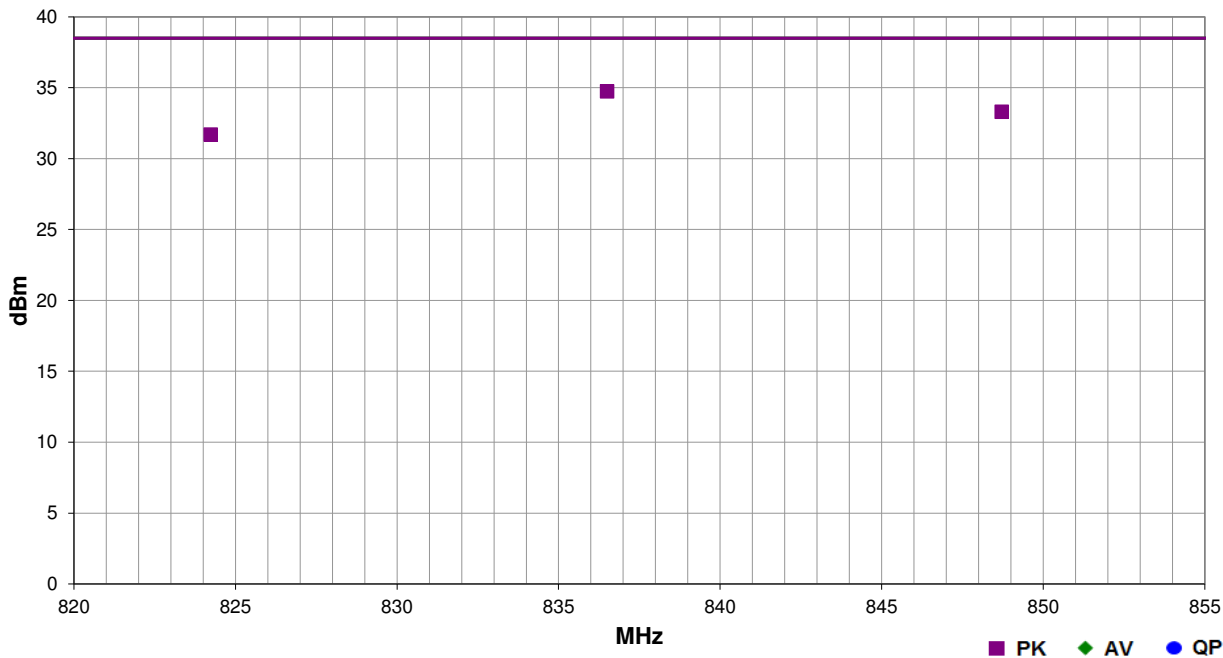
EmiRS 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/05/17	
Project:	None	Temperature:	21.7 °C	
Job Site:	EV01	Humidity:	39.8% RH	
Serial Number:	8	Barometric Pres.:	1016 mbar	
Tested by:	Jeff Alcock and Rod Peloquin			
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting GPRS, GSM-850, CS-4, 1UP/1DN, Low Ch = 824.2 MHz, Mid Ch = 836.6 MHz, High Ch = 848.8 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	FCC 22.913:2017	Test Method	ANSI/TIA/EIA-603-D-2010
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Run #	902	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
836.500	1.0	287.0	Vert	PK	2.99E+00	34.8	38.5	-3.8	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
848.717	1.0	276.0	Vert	PK	2.14E+00	33.3	38.5	-5.2	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
824.233	1.0	278.0	Vert	PK	1.48E+00	31.7	38.5	-6.8	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

ERP PART 22H - 2G, 3G



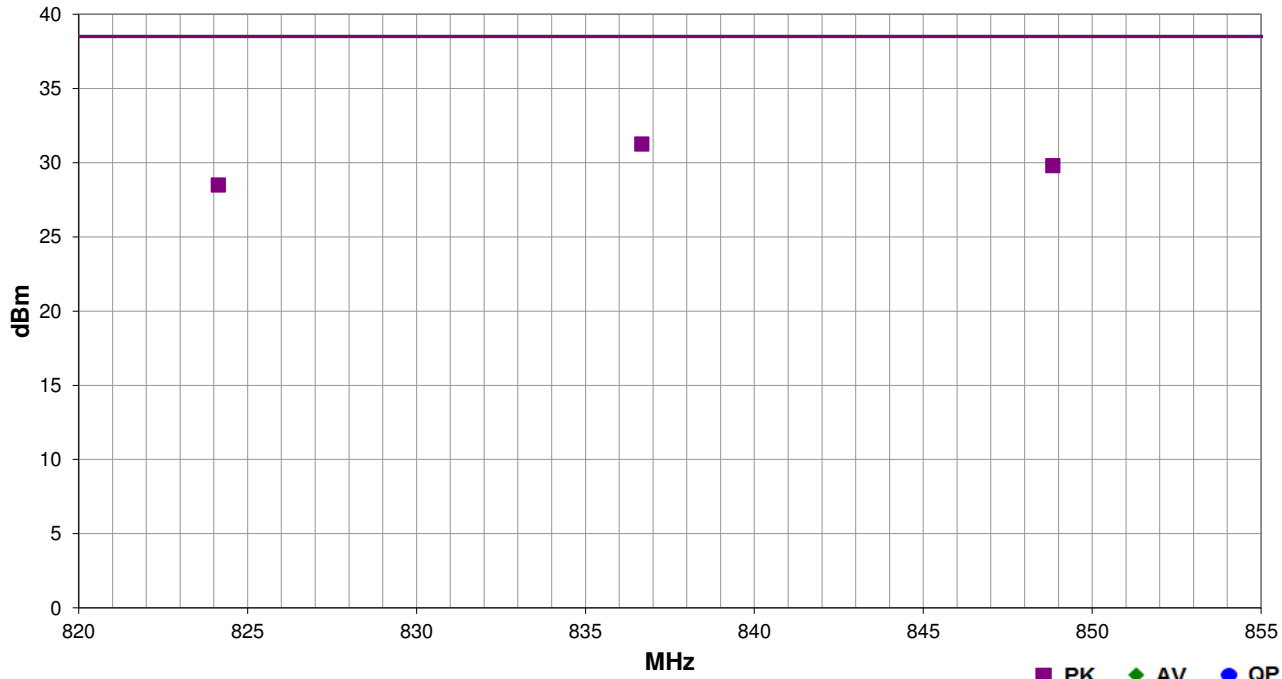
EmiRS 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/05/17	<i>Pauly Le Pellego</i>
Project:	None	Temperature:	21.7 °C	
Job Site:	EV01	Humidity:	39.8% RH	
Serial Number:	8	Barometric Pres.:	1016 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting E-GPRS, GSM-850, MCS-5 (8PSK), 1UP/1DN, Low Ch = 824.2 MHz, Mid Ch = 836.6 MHz, High Ch = 848.8 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 22.913:2017	ANSI/TIA/EIA-603-D-2010

Run #	903	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
836.667	1.0	284.0	Vert	PK	1.33E+00	31.3	38.5	-7.2	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
848.833	1.0	273.0	Vert	PK	9.55E-01	29.8	38.5	-8.7	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
824.133	1.0	279.0	Vert	PK	7.08E-01	28.5	38.5	-10.0	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

EIRP PART 24E - 2G, 3G



PSA-ESCI 2017.01.26

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

GPRS, PCS1900, CS-4, 1UP/1DN. Low Ch, 512 = 1850.2 MHz, Mid Ch, 661 = 1880 MHz, and High Ch, 810 = 1909.8 MHz
E-GPRS, PCS1900, MCS-5 (8PSK), 1UP/1DN, Low Ch, 512= 1850.2 MHz, Mid Ch,661 = 1880 MHz, and High Ch, 810 = 1909.8 MHz
WCDMA, 12.2k. Low Ch, 9262 = 1852.4 MHz, Mid Ch, 9400 = 1880 MHz, and High Ch, 9538 = 1907.6 MHz

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency | 1850.2 MHz | Stop Frequency | 1909.8 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
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo


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

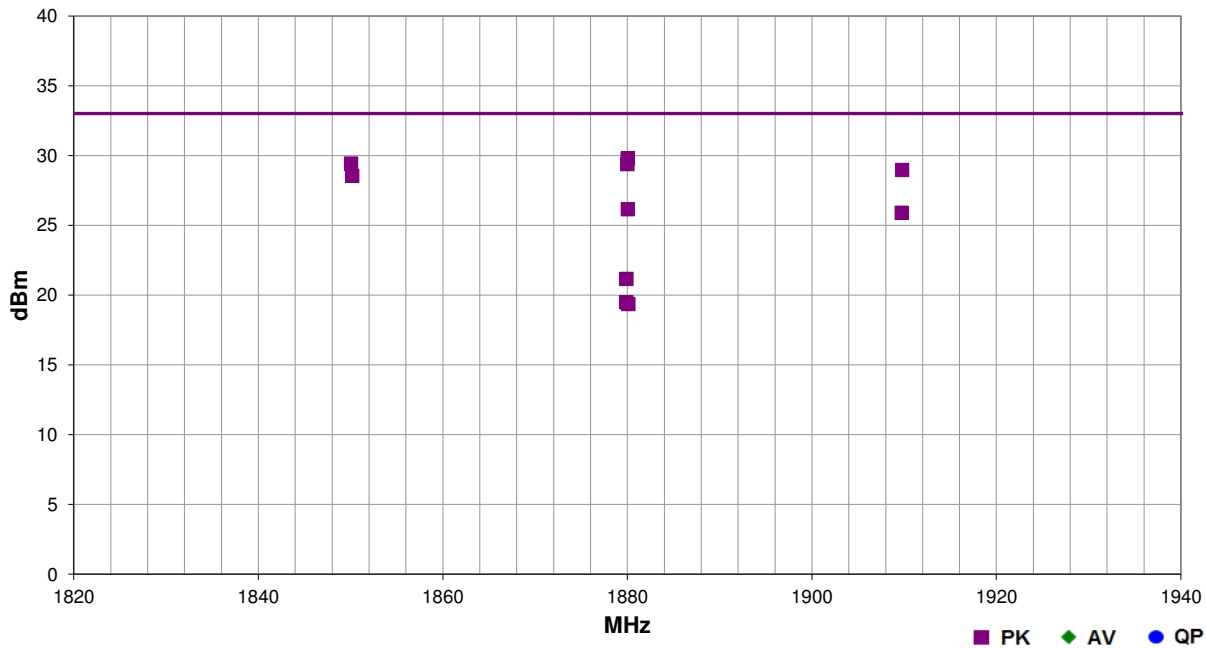


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/03/17	
Project:	None	Temperature:	22 °C	
Job Site:	EV01	Humidity:	33.2% RH	
Serial Number:	8	Barometric Pres.:	1028 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting GPRS, PCS 1900, CS-4, 1UP/1DN. Low Ch. = 1850.2 MHz, Mid Ch. = 1880 Mhz, and High Ch. = 1909.8 MHz.			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations			

Test Specifications	Test Method
FCC 24.232:2017	ANSI/TIA/EIA-603-D-2010

Run #	7	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1880.025	1.0	237.0	Vert	PK	9.53E-01	29.8	33.0	-3.2	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1880.000	1.0	235.0	Vert	PK	8.69E-01	29.4	33.0	-3.6	Mid Ch, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.042	1.0	241.0	Vert	PK	8.77E-01	29.4	33.0	-3.6	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1909.783	1.0	233.0	Vert	PK	7.89E-01	29.0	33.0	-4.0	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1850.175	1.0	258.0	Horz	PK	7.14E-01	28.5	33.0	-4.5	Low Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
1880.050	1.0	291.0	Horz	PK	4.13E-01	26.2	33.0	-6.8	Mid Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
1909.742	1.0	290.0	Horz	PK	3.89E-01	25.9	33.0	-7.1	High Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
1879.892	1.0	138.0	Horz	PK	1.31E-01	21.2	33.0	-11.8	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1879.908	1.0	121.0	Vert	PK	8.89E-02	19.5	33.0	-13.5	Mid Ch, EUT On Side, Main Ant On Side, Aux Ant On Side
1880.108	1.0	55.0	Horz	PK	8.63E-02	19.4	33.0	-13.6	Mid Ch, EUT Horz, Main Ant Vert, Aux Ant Vert

EIRP PART 24E - 2G, 3G



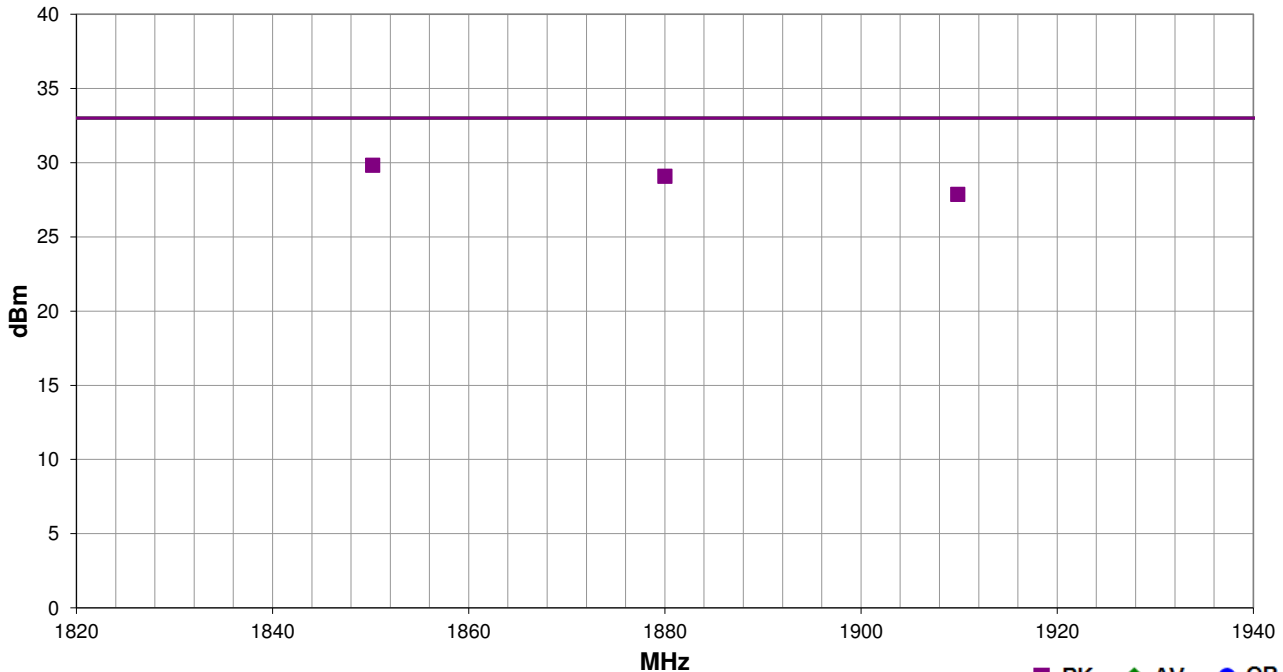
EmiR5 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/03/17	<i>Rodney Le Pelouquin</i>
Project:	None	Temperature:	22 °C	
Job Site:	EV01	Humidity:	33.2% RH	
Serial Number:	8	Barometric Pres.:	1028 mbar	Tested by: Jeff Alcock and Rod Pelouquin
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting E-GPRS, PCS 1900, MCS-5 (8PSK), 1UP/1DN. Low channel = 1850.2 MHz, Mid channel = 1880 Mhz, and High channel = 1909.8 MHz.			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations			

Test Specifications	Test Method
FCC 24.232:2017	ANSI/TIA/EIA-603-D-2010

Run #	11	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1850.200	1.0	232.0	Vert	PK	9.62E-01	29.8	33.0	-3.2	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1879.992	1.0	223.0	Vert	PK	8.11E-01	29.1	33.0	-3.9	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1909.858	1.0	232.0	Vert	PK	6.12E-01	27.9	33.0	-5.1	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

EIRP PART 24E - 2G, 3G



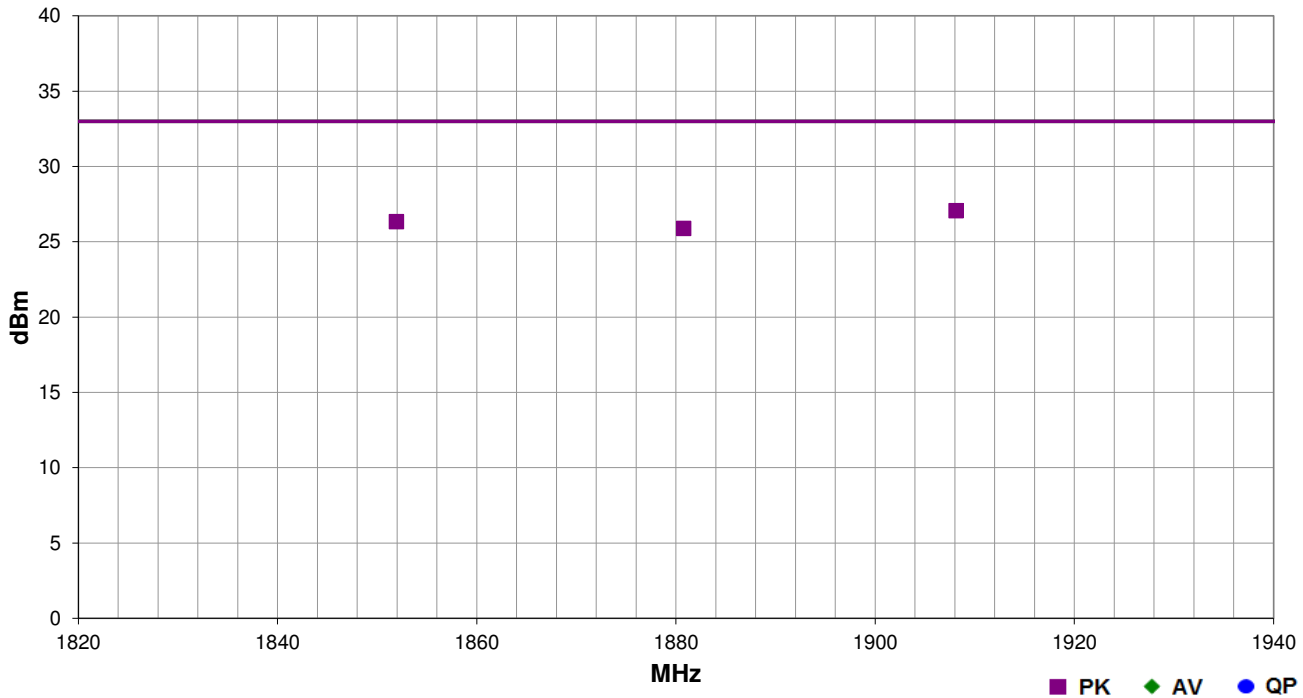
EmiR5 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/03/17	<i>Paul Le Pelouin</i>
Project:	None	Temperature:	22 °C	
Job Site:	EV01	Humidity:	33.2% RH	
Serial Number:	8	Barometric Pres.:	1028 mbar	Tested by: Jeff Alcoke and Rod Peloquin
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting WCDMA, 12.2k. Low Ch. = 1852.4 MHz, Mid Ch. = 1880 Mhz, and High Ch. = 1907.6 MHz.			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations			

Test Specifications	Test Method
FCC 24.232:2017	ANSI/TIA/EIA-603-D-2010

Run #	13	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1908.117	1.0	221.0	Vert	PK	5.08E-01	27.1	33.0	-5.9	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1851.933	1.0	309.0	Vert	PK	4.30E-01	26.3	33.0	-6.7	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1880.767	1.0	222.0	Vert	PK	3.88E-01	25.9	33.0	-7.1	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

EIRP PART 27 - 3G



PSA-ESCI 2017.01.26

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

WCDMA, R99, 12.2k, AWS-1700. Low Ch, 1312 = 1712.4 MHz, Mid Ch, 1427 = 1735.4 MHz, and High Ch, 1513 = 1752.6 MHz

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency | 1710 MHz | Stop Frequency | 1754 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

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



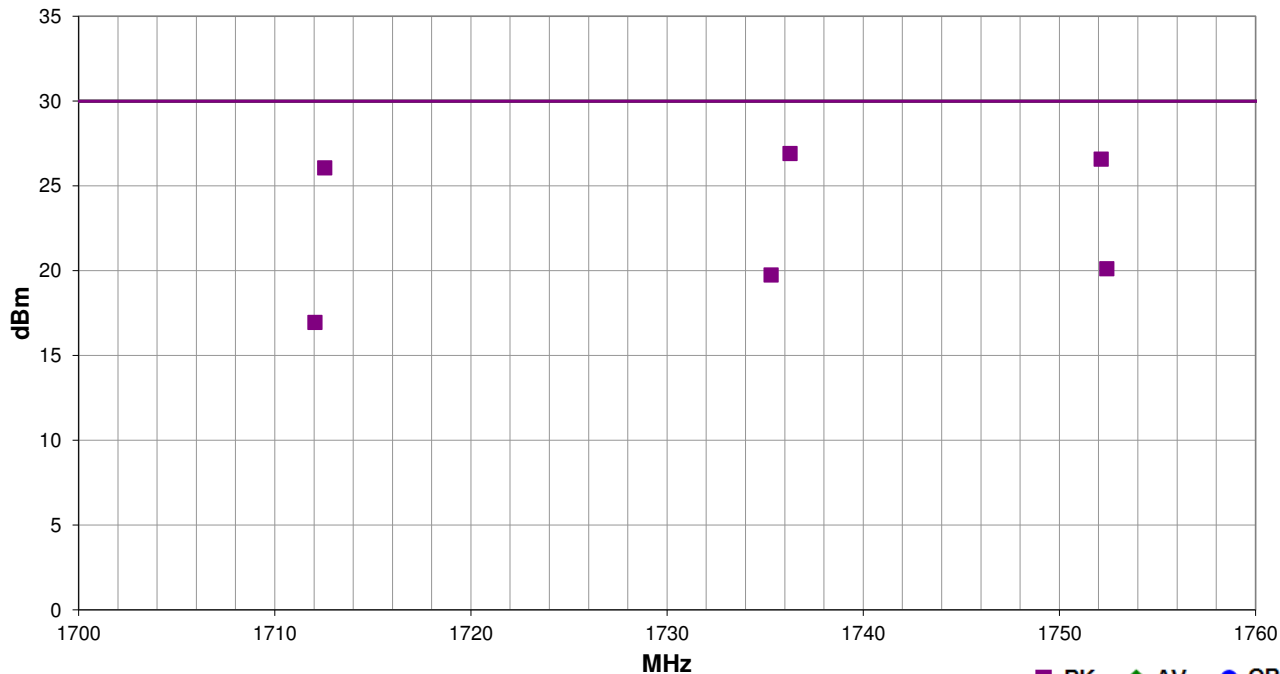
EmiRS 2017.01.25

PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/04/17	<i>Pauly Le Peloy</i>
Project:	None	Temperature:	23.6 °C	
Job Site:	EV01	Humidity:	34% RH	
Serial Number:	8	Barometric Pres.:	1018 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Transmitting WCDMA, AWS 1700 12.2k, Low channel = 1712.4 MHz, Mid channel = 1735.4 Mhz, and High channel = 1752.6 MHz			
Deviations:	None			
Comments:	See comments below for Channel, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 27.50:2017	ANSI/TIA/EIA-603-D-2010

Run #	14	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1736.267	1.5	3.0	Vert	PK	4.91E-01	26.9	30.0	-3.1	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1752.133	1.0	189.0	Vert	PK	4.55E-01	26.6	30.0	-3.4	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1712.550	1.0	227.0	Vert	PK	4.04E-01	26.1	30.0	-3.9	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1752.417	1.4	42.0	Horz	PK	1.03E-01	20.1	30.0	-9.9	High Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1735.300	1.0	145.0	Horz	PK	9.44E-02	19.8	30.0	-10.2	Mid Ch, EUT Vert, Main Ant Vert, Aux Ant Vert
1712.050	1.0	145.0	Horz	PK	4.95E-02	17.0	30.0	-13.0	Low Ch, EUT Vert, Main Ant Vert, Aux Ant Vert

EIRP PART 24E - LTE BAND 2



PSA-ESCI 2017.01.26

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

Continous Tx, LTE Band 2

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	18607	1850.7
	Mid	18900	1880
	High	19193	1909.3
3 MHz	Low	18615	1851.5
	Mid	18900	1880
	High	19185	1908.5
5 MHz	Low	18625	1852.5
	Mid	18900	1880
	High	19195	1907.5
10 MHz	Low	18650	1855
	Mid	18900	1880
	High	19150	1905
15 MHz	Low	18675	1857.5
	Mid	18900	1880
	High	19125	1902.5
20 MHz	Low	18700	1860
	Mid	18900	1880
	High	19100	1900

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 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

EIRP PART 24E - LTE BAND 2



TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Attenuator	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	12 mo
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

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

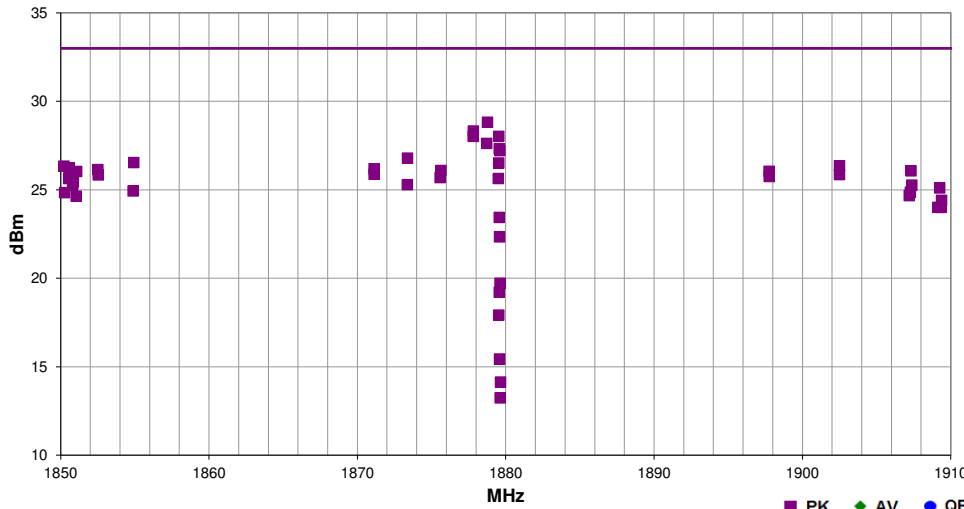


EmRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0007	Date:	04/26/17		
Project:	None	Temperature:	22.9 °C		
Job Site:	EV01	Humidity:	41.8% RH		
Serial Number:	8	Barometric Pres.:	1017 mbar		
EUT:				Tested by:	Jeff Alcoke and Rod Peloquin
Configuration: 1					
Customer: NetComm Wireless					
Attendees: None					
EUT Power: DC					
Operating Mode: Continous Tx, LTE Band 2					
Deviations: None					
Comments: See comments below for Channel, Frequency, Bandwidth, Modulation, Number of resource blocks and offset, EUT, Main Antenna, and Aux Antenna orientations.					

Test Specifications	Test Method
FCC 24.232:2017	ANSI/TIA/EIA-603-D-2010

Run #	14	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1878.770	1.0	127.0	Vert	PK	7.62E-01	28.8	33.0	-4.2	Mid Ch. 1880 MHz, 3 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1877.823	1.0	125.0	Vert	PK	6.79E-01	28.3	33.0	-4.7	Mid Ch. 1880 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.530	1.0	149.0	Vert	PK	6.34E-01	28.0	33.0	-5.0	Mid Ch. 1880 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1877.813	1.0	147.0	Vert	PK	6.34E-01	28.0	33.0	-5.0	Mid Ch. 1880 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1878.723	1.0	148.0	Vert	PK	5.78E-01	27.6	33.0	-5.4	Mid Ch. 1880 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.563	1.0	147.0	Vert	PK	5.40E-01	27.3	33.0	-5.7	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.605	1.0	259.0	Vert	PK	5.27E-01	27.2	33.0	-5.8	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
1873.377	1.0	127.0	Vert	PK	4.78E-01	26.8	33.0	-6.2	Mid Ch. 1880 MHz, 15 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1854.923	1.0	292.0	Vert	PK	4.51E-01	26.5	33.0	-6.5	Low Ch. 1855 MHz, 10 MHz BW, 16-QAM, 1 RB, 24 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.530	1.0	147.0	Vert	PK	4.49E-01	26.5	33.0	-6.5	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
1902.493	1.0	148.0	Vert	PK	4.33E-01	26.4	33.0	-6.6	High Ch. 1902.5 MHz, 15 MHz BW, 16-QAM, 1 RB, 37 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.223	1.0	313.0	Vert	PK	4.31E-01	26.3	33.0	-6.7	Low Ch. 1852.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 12 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.567	1.0	313.0	Vert	PK	4.21E-01	26.2	33.0	-6.8	Low Ch. 1850.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 2 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1871.130	1.0	124.0	Vert	PK	4.16E-01	26.2	33.0	-6.8	Mid Ch. 1880 MHz, 20 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1907.317	1.0	147.0	Vert	PK	4.05E-01	26.1	33.0	-6.9	High Ch. 1907.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1875.630	1.0	106.0	Vert	PK	4.06E-01	26.1	33.0	-6.9	Mid Ch. 1880 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1852.503	1.0	314.0	Vert	PK	4.11E-01	26.1	33.0	-6.9	Low Ch. 1852.5 MHz, 5 MHz BW, QPSK, 1 RB, 12 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1897.753	1.0	147.0	Vert	PK	4.03E-01	26.1	33.0	-7.0	High Ch. 1900 MHz, 20 MHz BW, QPSK, 1 RB, 37 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1851.083	1.0	310.0	Vert	PK	4.02E-01	26.0	33.0	-7.0	Low Ch. 1860 MHz, 20 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1902.500	1.0	148.0	Vert	PK	3.85E-01	25.9	33.0	-7.1	High Ch. 1900 MHz, 20 MHz BW, 16-QAM, 1 RB, 37 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1871.130	1.0	123.0	Vert	PK	3.88E-01	25.9	33.0	-7.1	Mid Ch. 1880 MHz, 20 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1897.767	1.0	149.0	Vert	PK	3.76E-01	25.8	33.0	-7.2	High Ch. 1902.5 MHz, 15 MHz BW, 16-QAM, 1 RB, 37 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1852.537	1.0	311.0	Vert	PK	3.84E-01	25.8	33.0	-7.2	Low Ch. 1852.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 12 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1875.580	1.0	123.0	Vert	PK	3.71E-01	25.7	33.0	-7.3	Mid Ch. 1880 MHz, 10 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.540	1.0	313.0	Vert	PK	3.66E-01	25.6	33.0	-7.4	Low Ch. 1850.7 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 2 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.497	1.0	58.0	Horz	PK	3.66E-01	25.6	33.0	-7.4	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
1850.853	1.0	314.0	Vert	PK	3.50E-01	25.4	33.0	-7.6	Low Ch. 1857.5 MHz, 15 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1907.373	1.0	148.0	Vert	PK	3.37E-01	25.3	33.0	-7.7	High Ch. 1907.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1873.373	1.0	125.0	Vert	PK	3.38E-01	25.3	33.0	-7.7	Mid Ch. 1880 MHz, 15 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.800	1.0	315.0	Vert	PK	3.34E-01	25.2	33.0	-7.8	Low Ch. 1852.5 MHz, 15 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1909.250	1.0	147.0	Vert	PK	3.24E-01	25.1	33.0	-7.9	High Ch. 1909.3 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 2 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1907.273	1.0	147.0	Vert	PK	3.07E-01	24.9	33.0	-8.1	High Ch. 1880 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1854.883	1.0	310.0	Vert	PK	3.12E-01	24.9	33.0	-8.1	Low Ch. 1855 MHz, 10 MHz BW, QPSK, 1 RB, 24 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.267	1.0	314.0	Vert	PK	3.05E-01	24.8	33.0	-8.2	Low Ch. 1851.5 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1907.200	1.0	146.0	Vert	PK	2.93E-01	24.7	33.0	-8.3	High Ch. 1908.5 MHz, 3 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1851.047	1.0	313.0	Vert	PK	2.91E-01	24.6	33.0	-8.4	Low Ch. 1857.5 MHz, 20 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1909.380	1.0	149.0	Vert	PK	2.76E-01	24.4	33.0	-8.6	High Ch. 1905 MHz, 10 MHz BW, QPSK, 1 RB, 49 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1909.137	1.0	148.0	Vert	PK	2.52E-01	24.0	33.0	-9.0	High Ch. 1909.3 MHz, 1.4 MHz BW, QPSK, 1 RB, 2 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1909.360	1.0	149.0	Vert	PK	2.52E-01	24.0	33.0	-9.0	Mid Ch. 1880 MHz, 10 MHz BW, 16-QAM, 1 RB, 49 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.563	1.0	237.0	Horz	PK	2.21E-01	23.4	33.0	-9.6	High Ch. 1905 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
1879.580	1.0	57.0	Horz	PK	1.71E-01	22.3	33.0	-10.7	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant 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
	1879.613	1.1	129.0	Vert	PK	9.38E-02	19.7	33.0	-13.3	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
	1879.563	1.2	180.0	Vert	PK	8.36E-02	19.2	33.0	-13.8	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
	1879.530	1.0	178.0	Vert	PK	6.19E-02	17.9	33.0	-15.1	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
	1879.580	1.0	47.0	Horz	PK	3.50E-02	15.4	33.0	-17.6	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
	1879.647	1.0	343.0	Horz	PK	2.59E-02	14.1	33.0	-18.9	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
	1879.622	1.0	304.0	Horz	PK	2.11E-02	13.2	33.0	-19.8	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert

EIRP PART 27 - LTE BAND 4



PSA-ESCI 2017.01.26

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

Continuous Tx, LTE Band 4

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	19957	1710.7
	Mid	20175	1732.5
	High	20393	1754.3
3 MHz	Low	19965	1711.5
	Mid	20175	1732.5
	High	20385	1753.5
5 MHz	Low	19975	1712.5
	Mid	20175	1732.5
	High	20375	1752.5
10 MHz	Low	20000	1715
	Mid	20175	1732.5
	High	20350	1750
15 MHz	Low	20025	1717.5
	Mid	20175	1732.5
	High	20325	1747.5
20 MHz	Low	20050	1720
	Mid	20175	1732.5
	High	20300	1745

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency | 1710 MHz | Stop Frequency | 1754 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

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

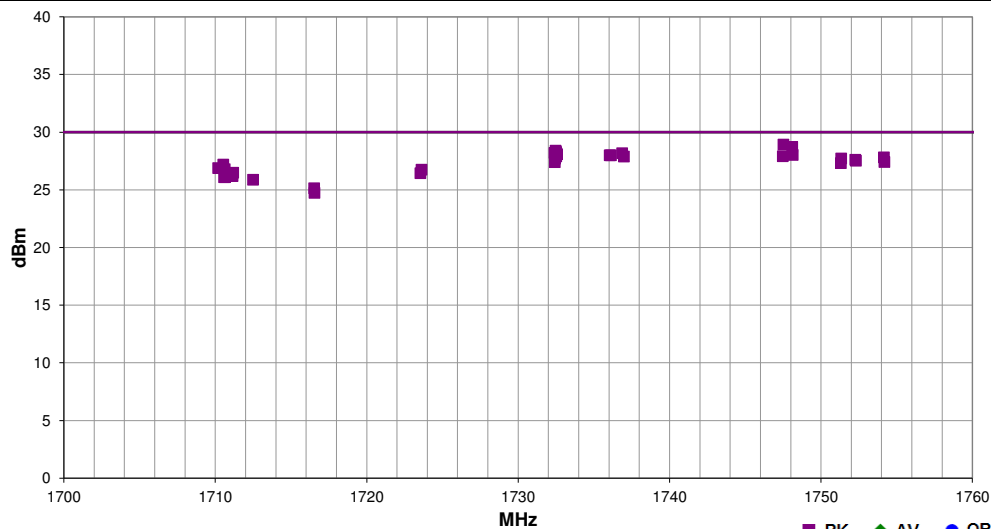


EmRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0005	Date:	04/17/17	
Project:	None	Temperature:	22.4 °C	
Job Site:	EV01	Humidity:	37.9% RH	
Serial Number:	8	Barometric Pres.:	1015 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 4, 1RB			
Deviations:	None			
Comments:	See comments below for Channel, Bandwidth, Modulation type, Offset, EUT, Main Antenna and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 27.50:2017	ANSI/TIA/EIA-603-D-2010

Run #	986	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1747.520	1.0	242.0	Vert	PK	7.80E-01	28.9	30.0	-1.1	High Ch. 1745.5 MHz, 15 MHz BW, 16-QAM, Offset 37, EUT Vert, Main Ant Vert, Aux Ant Vert
1748.095	1.0	239.0	Vert	PK	7.45E-01	28.7	30.0	-1.3	High Ch. 1750 MHz, 10 MHz BW, 16-QAM, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.472	1.0	206.0	Vert	PK	6.92E-01	28.4	30.0	-1.6	Mid Ch. 1732.5 MHz, 15 MHz BW, 16-QAM, Offset 37, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.488	1.0	211.0	Vert	PK	6.76E-01	28.3	30.0	-1.7	Mid Ch. 1732.5 MHz, 15 MHz BW, QPSK, Offset 37, EUT Vert, Main Ant Vert, Aux Ant Vert
1736.868	1.0	206.0	Vert	PK	6.58E-01	28.2	30.0	-1.8	Mid Ch. 1732.5 MHz, 10 MHz BW, 16-QAM, Offset 49, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.397	1.0	203.0	Vert	PK	6.61E-01	28.2	30.0	-1.8	Mid Ch. 1732.5 MHz, 1.4 MHz BW, 16-QAM, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.513	1.0	203.0	Vert	PK	6.61E-01	28.2	30.0	-1.8	Mid Ch. 1732.5 MHz, 5 MHz BW, 16-QAM, Offset 12, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.572	1.0	212.0	Vert	PK	6.46E-01	28.1	30.0	-1.9	Mid Ch. 1732.5 MHz, 3 MHz BW, 16-QAM, Offset 7, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.447	1.0	206.0	Vert	PK	6.46E-01	28.1	30.0	-1.9	Mid Ch. 1732.5 MHz, 3 MHz BW, QPSK, Offset 7, EUT Vert, Main Ant Vert, Aux Ant Vert
1736.125	1.0	240.0	Vert	PK	6.30E-01	28.0	30.0	-2.0	High Ch. 1745 MHz, 20 MHz BW, QPSK, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1736.042	1.0	244.0	Vert	PK	6.30E-01	28.0	30.0	-2.0	High Ch. 1745 MHz, 20 MHz BW, 16-QAM, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.455	1.0	207.0	Vert	PK	6.31E-01	28.0	30.0	-2.0	Mid Ch. 1732.5 MHz, 15 MHz BW, QPSK, Offset 37, EUT Vert, Main Ant Vert, Aux Ant Vert
1748.128	1.0	240.0	Vert	PK	6.34E-01	28.0	30.0	-2.0	High Ch. 1750 MHz, 10 MHz BW, QPSK, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1736.985	1.0	212.0	Vert	PK	6.14E-01	27.9	30.0	-2.1	Mid Ch. 1732.5 MHz, 10 MHz BW, QPSK, Offset 49, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.513	1.0	205.0	Vert	PK	6.17E-01	27.9	30.0	-2.1	Mid Ch. 1732.5 MHz, 5 MHz BW, QPSK, Offset 12, EUT Vert, Main Ant Vert, Aux Ant Vert
1747.478	1.0	241.0	Vert	PK	6.19E-01	27.9	30.0	-2.1	High Ch. 1745.5 MHz, 15 MHz BW, QPSK, Offset 37, EUT Vert, Main Ant Vert, Aux Ant Vert
1754.153	1.0	72.0	Vert	PK	6.05E-01	27.8	30.0	-2.2	High Ch. 1754.3 MHz, 1.4 MHz BW, 16-QAM, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.435	1.0	208.0	Vert	PK	5.89E-01	27.7	30.0	-2.3	Mid Ch. 1732.5 MHz, 1.4 MHz BW, QPSK, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1751.337	1.0	237.0	Vert	PK	5.92E-01	27.7	30.0	-2.3	High Ch. 1752.5 MHz, 5 MHz BW, 16-QAM, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1752.262	1.0	78.0	Vert	PK	5.77E-01	27.6	30.0	-2.4	High Ch. 1753.5 MHz, 3 MHz BW, 16-QAM, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1752.303	1.0	77.0	Vert	PK	5.65E-01	27.5	30.0	-2.5	High Ch. 1753.5 MHz, 3 MHz BW, QPSK, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1732.422	1.0	243.0	Vert	PK	5.50E-01	27.4	30.0	-2.6	Mid Ch. 1732.5 MHz, 1.4 MHz BW, QPSK, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1754.187	1.0	74.0	Vert	PK	5.52E-01	27.4	30.0	-2.6	High Ch. 1754.3 MHz, 1.4 MHz BW, QPSK, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1751.312	1.0	240.0	Vert	PK	5.40E-01	27.3	30.0	-2.7	High Ch. 1752.5 MHz, 5 MHz BW, QPSK, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1710.525	1.0	82.0	Vert	PK	5.24E-01	27.2	30.0	-2.8	Low Ch. 1710.7 MHz, 1.4 MHz BW, 16-QAM, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1710.192	1.0	80.0	Vert	PK	4.89E-01	26.9	30.0	-3.1	Low Ch. 1711.5 MHz, 3 MHz BW, 16-QAM, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1723.622	1.0	207.0	Vert	PK	4.73E-01	26.8	30.0	-3.2	Mid Ch. 1732.5 MHz, 20 MHz BW, 16-QAM, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1710.620	1.0	82.0	Vert	PK	4.78E-01	26.8	30.0	-3.2	Low Ch. 1715 MHz, 10 MHz BW, 16-QAM, Offset 12, EUT Vert, Main Ant Vert, Aux Ant Vert
1723.547	1.0	207.0	Vert	PK	4.42E-01	26.5	30.0	-3.5	Mid Ch. 1732.5 MHz, 20 MHz BW, QPSK, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1711.180	1.0	158.0	Vert	PK	4.46E-01	26.5	30.0	-3.5	Low Ch. 1720 MHz, 20 MHz BW, 16-QAM, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1711.138	1.0	81.0	Vert	PK	4.16E-01	26.2	30.0	-3.8	Low Ch. 1720 MHz, 20 MHz BW, QPSK, Offset 0, EUT Vert, Main Ant Vert, Aux Ant Vert
1710.583	1.0	83.0	Vert	PK	4.06E-01	26.1	30.0	-3.9	Low Ch. 1710.7 MHz, 1.4 MHz BW, QPSK, Offset 2, EUT Vert, Main Ant Vert, Aux Ant Vert
1710.645	1.0	82.0	Vert	PK	4.06E-01	26.1	30.0	-3.9	Low Ch. 1715 MHz, 10 MHz BW, QPSK, Offset 12, EUT Vert, Main Ant Vert, Aux Ant Vert
1712.487	1.0	85.0	Vert	PK	3.87E-01	25.9	30.0	-4.1	Low Ch. 1712.5 MHz, 5 MHz BW, 16-QAM, Offset 12, EUT Vert, Main Ant Vert, Aux Ant Vert
1716.525	1.0	158.0	Vert	PK	3.27E-01	25.1	30.0	-4.9	Low Ch. 1717.5 MHz, 15 MHz BW, 16-QAM, Offset 37, EUT Vert, Main Ant Vert, Aux Ant Vert
1716.550	1.0	156.0	Vert	PK	2.98E-01	24.7	30.0	-5.3	Low Ch. 1717.5 MHz, 15 MHz BW, QPSK, Offset 37, EUT Vert, Main Ant Vert, Aux Ant Vert

ERP PART 22H - LTE BAND 5



PSA-ESCI 2017.01.26

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

Continuous Tx, LTE Band 5

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	20407	824.7
	Mid	20525	836.5
	High	20643	848.3
3 MHz	Low	20415	825.5
	Mid	20525	836.5
	High	20635	847.5
5 MHz	Low	20425	826.5
	Mid	20525	836.5
	High	20625	486.5
10 MHz	Low	20450	829
	Mid	20525	836.5
	High	20600	844

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	824 MHz	Stop Frequency	850 MHz
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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	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Dipole	A.H. Systems, Inc.	FCC-4	ADEA	8/23/2016	36 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

TEST DESCRIPTION

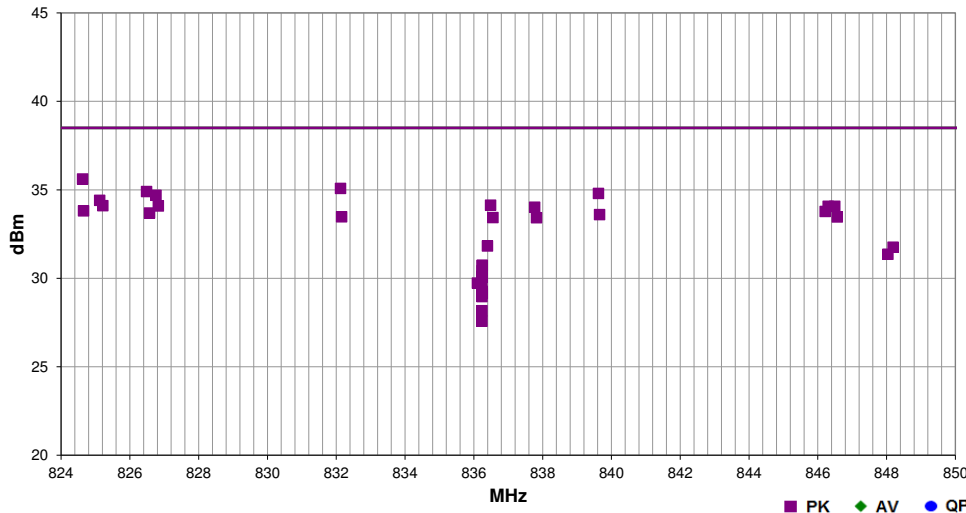
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The amplitude and frequency of the highest emission were noted. The EUT was then replaced with a 1/2 wave dipole that was successively tuned to the highest 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



Work Order:	NETC0007	Date:	04/25/17	<i>Probing to Perseus</i> <small>EmiRS 2017.01.25 PSA-ESCI 2017.01.26</small>
Project:	None	Temperature:	21.9 °C	
Job Site:	EV01	Humidity:	39.8% RH	
Serial Number:	8	Barometric Pres.:	1019 mbar	
EUT:	NTC-140-01			
Configuration:	1			
Customer:	NetComm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 5			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Modulation type, RB size and offset, EUT, Main Antenna, and Auxillary Antenna orientations.			

Test Specifications	Test Method						
FCC 22.913:2017	ANSI/TIA/EIA-603-D-2010						
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	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
824.625	1.2	138.0	Horz	PK	3.64E+00	35.6	38.5	-2.9	Low Ch. 826.5 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
832.125	1.2	138.0	Horz	PK	3.22E+00	35.1	38.5	-3.4	Mid Ch. 836.5 MHz, 10 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
826.484	1.2	139.0	Horz	PK	3.09E+00	34.9	38.5	-3.6	Low Ch. 826.5 MHz, 10 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
839.622	1.1	137.0	Horz	PK	3.02E+00	34.8	38.5	-3.7	High Ch. 844 MHz, 10 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
826.758	1.2	138.0	Horz	PK	2.94E+00	34.7	38.5	-3.8	Low Ch. 825.5 MHz, 3 MHz BW, 16-QAM, 1 RB, 14 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
825.123	1.1	138.0	Horz	PK	2.76E+00	34.4	38.5	-4.1	Low Ch. 824.7 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 5 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
836.486	1.2	138.0	Horz	PK	2.59E+00	34.1	38.5	-4.4	Mid Ch. 836.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
826.827	1.1	136.0	Horz	PK	2.56E+00	34.1	38.5	-4.4	Low Ch. 825.5 MHz, 3 MHz BW, QPSK, 1 RB, 14 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
825.212	1.1	136.0	Horz	PK	2.58E+00	34.1	38.5	-4.4	Low Ch. 824.7 MHz, 1.4 MHz BW, QPSK, 1 RB, 5 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
846.492	1.1	140.0	Horz	PK	2.55E+00	34.1	38.5	-4.4	High Ch. 846.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
846.303	1.1	138.0	Horz	PK	2.55E+00	34.1	38.5	-4.4	High Ch. 847.5 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
837.768	1.1	139.0	Horz	PK	2.52E+00	34.0	38.5	-4.5	Mid Ch. 836.5 MHz, 3 MHz BW, 16-QAM, 1 RB, 14 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
824.654	1.1	138.0	Horz	PK	2.40E+00	33.8	38.5	-4.7	Low Ch. 829 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
846.213	1.1	136.0	Horz	PK	2.39E+00	33.8	38.5	-4.7	High Ch. 847.5 MHz, 3 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
826.570	1.2	140.0	Horz	PK	2.34E+00	33.7	38.5	-4.8	Low Ch. 829 MHz, 5 MHz BW, QPSK, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
839.655	1.2	138.0	Horz	PK	2.29E+00	33.6	38.5	-4.9	High Ch. 844 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
832.155	1.1	138.0	Horz	PK	2.23E+00	33.5	38.5	-5.0	Mid Ch. 836.5 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
846.568	1.1	139.0	Horz	PK	2.22E+00	33.5	38.5	-5.0	High Ch. 846.5 MHz, 5 MHz BW, QPSK, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
836.557	1.1	138.0	Horz	PK	2.20E+00	33.4	38.5	-5.1	Mid Ch. 836.5 MHz, 5 MHz BW, QPSK, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
837.820	1.1	140.0	Horz	PK	2.20E+00	33.4	38.5	-5.1	Mid Ch. 836.5 MHz, 3 MHz BW, QPSK, 1 RB, 14 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
836.397	1.1	135.0	Horz	PK	1.52E+00	31.8	38.5	-6.7	Mid Ch. 836.5 MHz, 1.4 MHz BW, 16-QAM, 3 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
848.187	1.1	138.0	Horz	PK	1.50E+00	31.8	38.5	-6.7	High Ch. 848.3 MHz, 1.4 MHz BW, 16-QAM, 3 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
848.040	1.1	140.0	Horz	PK	1.37E+00	31.4	38.5	-7.1	High Ch. 848.3 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
836.243	1.2	136.0	Horz	PK	1.18E+00	30.7	38.5	-7.8	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
836.242	1.1	95.0	Horz	PK	1.18E+00	30.7	38.5	-7.8	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
836.240	1.1	195.0	Horz	PK	1.10E+00	30.4	38.5	-8.1	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
836.237	1.2	194.0	Horz	PK	1.03E+00	30.1	38.5	-8.4	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
836.240	1.2	123.0	Vert	PK	1.02E+00	30.1	38.5	-8.4	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
836.105	1.2	207.0	Horz	PK	9.40E-01	29.7	38.5	-8.8	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
836.233	1.0	97.0	Vert	PK	8.85E-01	29.5	38.5	-9.0	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
836.240	1.1	119.0	Vert	PK	8.45E-01	29.3	38.5	-9.2	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
836.245	1.2	269.0	Horz	PK	8.18E-01	29.1	38.5	-9.4	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
836.237	1.0	43.0	Vert	PK	7.89E-01	29.0	38.5	-9.5	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
836.237	1.0	41.0	Vert	PK	6.56E-01	28.2	38.5	-10.3	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
836.235	1.0	120.0	Vert	PK	5.71E-01	27.6	38.5	-10.9	Mid Ch. 836.5 MHz, 1.4 MHz BW, QPSK, 3 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side

ERP PART 27 - LTE BAND 13



PSA-ESCI 2017.01.26

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

Continuous Tx, LTE Band 13, 1RB

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
5 MHz	Low	23205	779.5
	Mid	23230	782
	High	23255	784.5
10 MHz	Mid	23230	782

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0005 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency | 779 MHz | Stop Frequency | 785 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 - Dipole	A.H. Systems, Inc.	FCC-4	ADEA	8/23/2016	36 mo
Attenuator	Coaxicom	3910-20	AXZ	5/18/2016	12 mo
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The 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.

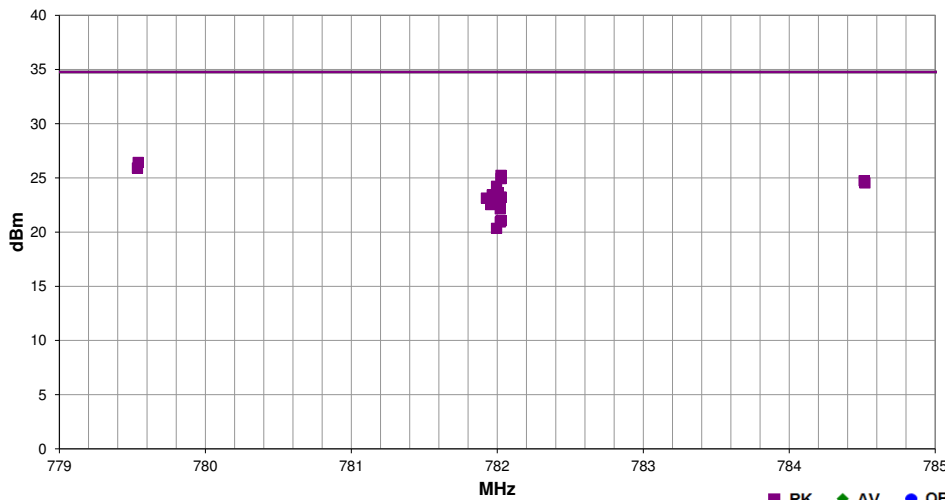
ERP PART 27 - LTE BAND 13



Work Order:	NETC0005	Date:	04/17/17	<i>Ready to Relay</i> <small>EmiPS 2017.01.26 PSA-ESG 2017.01.26</small>
Project:	None	Temperature:	22.1 °C	
Job Site:	EV01	Humidity:	38.9% RH	
Serial Number:	8	Barometric Pres.:	1015 mbar	
EUT:	NTC-140-01			
Configuration:	2			
Customer:	Netcomm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 13, 1RB			
Deviations:	None			
Comments:	See comments below for Channel, Bandwidth, Modulation type, Offset, EUT, Main Antenna and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 27.50:2017	ANSI/TIA/EIA-603-D-2010

Run #	987	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
779.540	2.4	263.0	Horz	PK	4.39E-01	26.4	34.8	-8.4	Low Channel 779.5 MHz, 5 MHz BW, 16-QAM, Offset 12, EUT Horz, Main Ant On Side, Aux Ant On Side
779.535	2.4	259.0	Horz	PK	3.91E-01	25.9	34.8	-8.9	Low Channel 779.5 MHz, 5 MHz BW, QPSK, Offset 12, EUT Horz, Main Ant On Side, Aux Ant On Side
782.025	2.3	92.0	Horz	PK	3.33E-01	25.2	34.8	-9.5	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Horz, Main Ant On Side, Aux Ant On Side
782.025	1.2	100.0	Horz	PK	3.11E-01	24.9	34.8	-9.8	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT On Side, Main Ant On Side, Aux Ant On Side
784.513	2.3	261.0	Horz	PK	2.98E-01	24.7	34.8	-10.0	High Channel 784.5 MHz, 5 MHz BW, QPSK, Offset 12, EUT Horz, Main Ant On Side, Aux Ant On Side
784.518	2.3	246.0	Horz	PK	2.84E-01	24.5	34.8	-10.2	High Channel 784.5 MHz, 5 MHz BW, 16-QAM, Offset 12, EUT Horz, Main Ant On Side, Aux Ant On Side
781.995	1.1	189.0	Horz	PK	2.65E-01	24.2	34.8	-10.5	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Vert, Main Ant Vert, Aux Ant Vert
782.025	1.2	96.0	Horz	PK	2.31E-01	23.6	34.8	-11.1	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Vert, Main Ant On Side, Aux Ant On Side
781.965	2.4	96.0	Horz	PK	2.20E-01	23.4	34.8	-11.3	Mid Channel 782 MHz, 10 MHz BW, 16-QAM, Offset 24, EUT Horz, Main Ant On Side, Aux Ant On Side
782.025	1.3	189.0	Horz	PK	2.10E-01	23.2	34.8	-11.5	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Horz, Main Ant Vert, Aux Ant Vert
781.990	1.2	187.0	Horz	PK	2.06E-01	23.1	34.8	-11.6	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT On Side, Main Ant Vert, Aux Ant Vert
781.925	2.6	99.0	Horz	PK	2.06E-01	23.1	34.8	-11.6	Mid Channel 782 MHz, 10 MHz BW, QPSK, Offset 24, EUT Horz, Main Ant On Side, Aux Ant On Side
782.000	2.3	101.0	Horz	PK	2.01E-01	23.0	34.8	-11.7	Mid Channel 782 MHz, 5 MHz BW, 16-QAM, Offset 12, EUT Horz, Main Ant On Side, Aux Ant On Side
781.980	1.0	100.0	Vert	PK	1.84E-01	22.6	34.8	-12.1	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Vert, Main Ant Vert, Aux Ant Vert
781.955	1.0	122.0	Vert	PK	1.79E-01	22.5	34.8	-12.2	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Horz, Main Ant Vert, Aux Ant Vert
782.020	1.0	137.0	Vert	PK	1.64E-01	22.1	34.8	-12.6	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT On Side, Main Ant Vert, Aux Ant Vert
782.025	1.0	219.0	Vert	PK	1.27E-01	21.0	34.8	-13.7	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Horz, Main Ant On Side, Aux Ant On Side
782.020	2.3	86.0	Vert	PK	1.24E-01	20.9	34.8	-13.8	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT On Side, Main Ant On Side, Aux Ant On Side
781.995	1.0	276.0	Vert	PK	1.08E-01	20.3	34.8	-14.4	Mid Channel 782 MHz, 5 MHz BW, QPSK, Offset 12, EUT Vert, Main Ant On Side, Aux Ant On Side

ERP PART 27 - LTE BAND 17



PSA-ESCI 2017.01.26

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

Continuous Tx, LTE Band 17

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
5 MHz	Low	23755	706.5
	Mid	23790	710
	High	23825	713.5
10 MHz	Low	23780	709
	Mid	23780	710
	High	23780	711

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 704 MHz | Stop Frequency | 712 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	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Antenna - Dipole	A.H. Systems, Inc.	FCC-4	ADEA	8/23/2016	36 mo
Meter - Power	Gigatronics	8651A	SPM	5/20/2016	12 mo
Power Sensor	Gigatronics	80701A	SPL	5/20/2016	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Bilog Cables	EVA	2/6/2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The 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

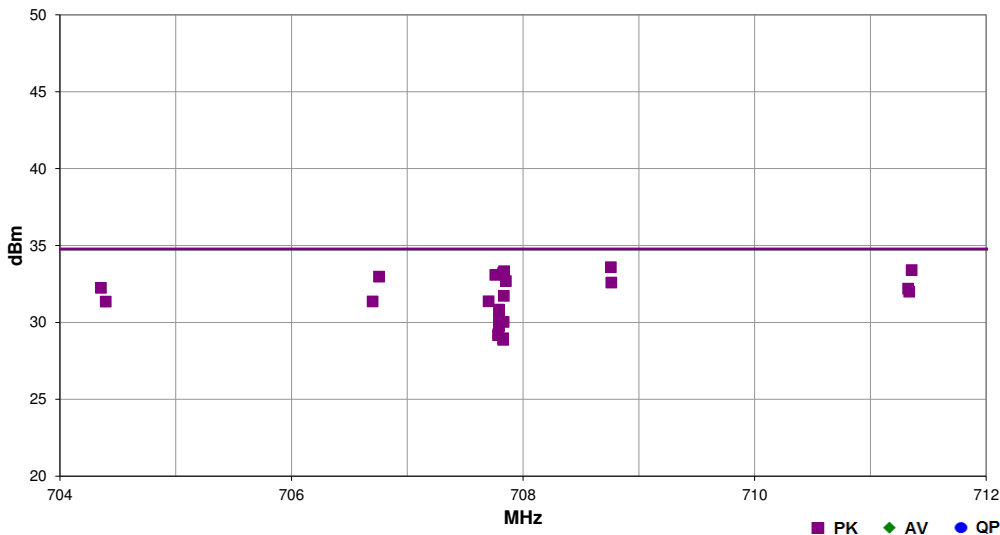


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0007	Date:	04/25/17	
Project:	None	Temperature:	22.6 °C	
Job Site:	EV01	Humidity:	39.2% RH	
Serial Number:	8	Barometric Pres.:	1017 mbar	
EUT:	NTC-140-01			
Configuration:	1			
Customer:	NetComm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 17			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Modulation type, RB size and offset, EUT, Main Antenna, and Auxillary Antenna orientations.			

Test Specifications	Test Method
FCC 27.50:2017	ANSI/TIA/EIA-603-D-2010

Run #	4	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
708.758	1.4	113.0	Horz	PK	2.29E+00	33.6	34.8	-1.2	High Ch. 711 MHz, 10 MHz BW, 16-QAM, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
711.357	1.4	112.0	Horz	PK	2.19E+00	33.4	34.8	-1.4	High Ch. 713.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
707.837	1.0	87.0	Vert	PK	2.15E+00	33.3	34.8	-1.4	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert
707.828	1.0	101.0	Vert	PK	2.10E+00	33.2	34.8	-1.5	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
707.761	1.4	111.0	Horz	PK	2.04E+00	33.1	34.8	-1.7	Mid Ch. 710 MHz, 10 MHz BW, 16-QAM, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
706.756	1.4	115.0	Horz	PK	1.99E+00	33.0	34.8	-1.8	Low Ch. 709 MHz, 10 MHz BW, 16-QAM, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
707.852	1.5	116.0	Horz	PK	1.86E+00	32.7	34.8	-2.1	Mid Ch. 710 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
708.763	1.4	114.0	Horz	PK	1.82E+00	32.6	34.8	-2.2	High Ch. 711 MHz, 10 MHz BW, QPSK, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
704.354	1.4	112.0	Horz	PK	1.68E+00	32.3	34.8	-2.5	Low Ch. 706.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
711.325	1.4	118.0	Horz	PK	1.66E+00	32.2	34.8	-2.6	High Ch. 713.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
711.336	1.4	112.0	Horz	PK	1.58E+00	32.0	34.8	-2.8	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
707.833	1.0	194.0	Vert	PK	1.49E+00	31.7	34.8	-3.0	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
707.702	1.4	115.0	Horz	PK	1.37E+00	31.4	34.8	-3.4	Mid Ch. 710 MHz, 10 MHz BW, QPSK, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
706.700	1.4	114.0	Horz	PK	1.37E+00	31.4	34.8	-3.4	Low Ch. 709 MHz, 10 MHz BW, QPSK, 1 RB, 12 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
704.395	1.4	112.0	Horz	PK	1.36E+00	31.4	34.8	-3.4	Low Ch. 706.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
707.792	1.0	33.0	Vert	PK	1.21E+00	30.8	34.8	-3.9	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
707.793	1.4	113.0	Horz	PK	1.14E+00	30.6	34.8	-4.2	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant Vert, Aux Ant Vert
707.792	1.0	36.0	Vert	PK	1.03E+00	30.1	34.8	-4.6	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
707.832	1.0	37.0	Vert	PK	1.01E+00	30.0	34.8	-4.7	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
707.792	2.6	167.0	Horz	PK	9.48E-01	29.8	34.8	-5.0	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant On Side, Aux Ant On Side
707.788	1.3	168.0	Horz	PK	8.45E-01	29.3	34.8	-5.5	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT On Side, Main Ant On Side, Aux Ant On Side
707.783	1.2	168.0	Horz	PK	8.26E-01	29.2	34.8	-5.6	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant On Side, Aux Ant On Side
707.828	1.3	168.0	Horz	PK	7.89E-01	29.0	34.8	-5.8	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
707.828	1.5	111.0	Horz	PK	7.71E-01	28.9	34.8	-5.9	Mid Ch. 710 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Vert, Main Ant Vert, Aux Ant Vert

EIRP PART 24E - LTE BAND 25



PSA-ESCI 2017.01.26

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

Continuous Tx, LTE Band 25

Bandwidth (MHz)	Channel (L,M,H)	Channel Number	Freq (MHz)
1.4 MHz	Low	26047	1850.7
	Mid	26340	1880
	High	26683	1914.3
3 MHz	Low	26055	1851.5
	Mid	26340	1880
	High	26675	1913.5
5 MHz	Low	26065	1852.5
	Mid	26340	1880
	High	26665	1912.5
10 MHz	Low	26090	1855
	Mid	26340	1880
	High	26640	1910
15 MHz	Low	26115	1857.5
	Mid	26340	1880
	High	26615	1907.5
20 MHz	Low	26140	1860
	Mid	26340	1880
	High	26590	1905

POWER SETTINGS INVESTIGATED

DC

CONFIGURATIONS INVESTIGATED

NETC0007 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 1850 MHz | Stop Frequency | 1915 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
Universal Radio Communication Tester	Anritsu	MT8820C	AFK	NCR	0 mo
Attenuator	S.M. Electronics	18N-06	AWN	12/12/2016	12 mo
Meter - Power	Gigatronics	8651A	SPM	4/26/2017	12 mo
Power Sensor	Gigatronics	80701A	SPL	4/26/2017	12 mo
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	36 mo
Antenna - Double Ridge	EMCO	3115	AHC	6/23/2016	24 mo
Attenuator	Coaxicom	3910-20	AXZ	4/19/2017	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	2/6/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	4/13/2017	12 mo

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 25

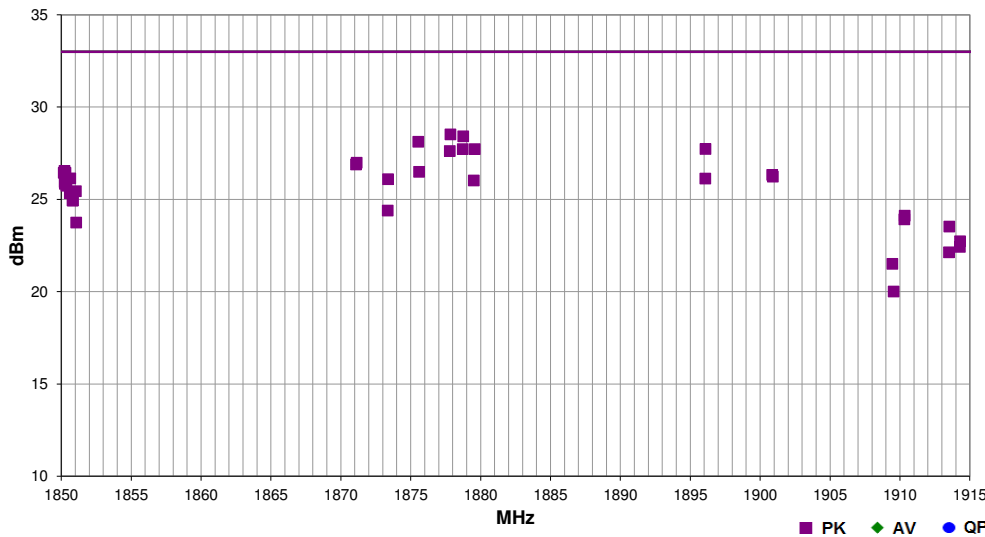


EmiRS 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	NETC0007	Date:	04/26/17	
Project:	None	Temperature:	22.9 °C	
Job Site:	EV01	Humidity:	41.8% RH	
Serial Number:	8	Barometric Pres.:	1017 mbar	
EUT:	NTC-140-01			
Configuration:	1			
Customer:	NetComm Wireless			
Attendees:	None			
EUT Power:	DC			
Operating Mode:	Continuous Tx, LTE Band 25			
Deviations:	None			
Comments:	See comments below for Channel, Frequency, Bandwidth, Modulation, Number of resource blocks and offset, EUT, Main Antenna, and Aux Antenna orientations.			

Test Specifications	Test Method
FCC 24.232:2017	ANSI/TIA/EIA-603-D-2010

Run #	15	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1877.840	1.0	125.0	Vert	PK	7.11E-01	28.5	33.0	-4.5	Mid Ch. 1880 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1878.760	1.0	123.0	Vert	PK	6.95E-01	28.4	33.0	-4.6	Mid Ch. 1880 MHz, 3 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1875.537	1.0	105.0	Vert	PK	6.49E-01	28.1	33.0	-4.9	Mid Ch. 1880 MHz, 10 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1896.087	1.0	147.0	Vert	PK	5.93E-01	27.7	33.0	-5.3	High Ch. 1905 MHz, 20 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.577	1.0	125.0	Vert	PK	5.92E-01	27.7	33.0	-5.3	Mid Ch. 1880 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1878.723	1.0	123.0	Vert	PK	5.92E-01	27.7	33.0	-5.3	Mid Ch. 1880 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1877.790	1.0	126.0	Vert	PK	5.78E-01	27.6	33.0	-5.4	Mid Ch. 1880 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1871.133	1.0	103.0	Vert	PK	5.00E-01	27.0	33.0	-6.0	Mid Ch. 1880 MHz, 20 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1871.083	1.0	105.0	Vert	PK	4.89E-01	26.9	33.0	-6.1	Mid Ch. 1880 MHz, 20 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1875.597	1.0	105.0	Vert	PK	4.46E-01	26.5	33.0	-6.5	Mid Ch. 1880 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.230	1.0	311.0	Vert	PK	4.51E-01	26.5	33.0	-6.5	Low Ch. 1851.5 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.303	1.0	312.0	Vert	PK	4.41E-01	26.4	33.0	-6.6	Low Ch. 1852.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.170	1.0	312.0	Vert	PK	4.41E-01	26.4	33.0	-6.6	Low Ch. 1851.5 MHz, 3 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1900.857	1.0	147.0	Vert	PK	4.30E-01	26.3	33.0	-6.7	High Ch. 1907.5 MHz, 15 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1900.907	1.0	147.0	Vert	PK	4.20E-01	26.2	33.0	-6.8	High Ch. 1907.5 MHz, 15 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.637	1.0	310.0	Vert	PK	4.11E-01	26.1	33.0	-6.9	Low Ch. 1855 MHz, 10 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1873.373	1.0	104.0	Vert	PK	4.06E-01	26.1	33.0	-6.9	Mid Ch. 1880 MHz, 15 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1896.080	1.0	148.0	Vert	PK	4.10E-01	26.1	33.0	-6.9	High Ch. 1905 MHz, 20 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1879.510	1.0	124.0	Vert	PK	4.00E-01	26.0	33.0	-7.0	Mid Ch. 1880 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.243	1.0	312.0	Vert	PK	3.93E-01	25.9	33.0	-7.1	Low Ch. 1851.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.253	1.0	312.0	Vert	PK	3.84E-01	25.8	33.0	-7.2	Low Ch. 1851.5 MHz, 3 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.373	1.0	310.0	Vert	PK	3.75E-01	25.7	33.0	-7.3	Low Ch. 1852.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1851.043	1.0	312.0	Vert	PK	3.50E-01	25.4	33.0	-7.6	Low Ch. 1860 MHz, 20 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.607	1.0	311.0	Vert	PK	3.42E-01	25.3	33.0	-7.7	Low Ch. 1855 MHz, 10 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.800	1.0	313.0	Vert	PK	3.12E-01	24.9	33.0	-8.1	Low Ch. 1857.5 MHz, 15 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1850.843	1.0	310.0	Vert	PK	3.12E-01	24.9	33.0	-8.1	Low Ch. 1857.5 MHz, 15 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1873.357	1.0	104.0	Vert	PK	2.75E-01	24.4	33.0	-8.6	Mid Ch. 1880 MHz, 15 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1910.333	1.0	148.0	Vert	PK	2.58E-01	24.1	33.0	-8.9	High Ch. 1912.5 MHz, 5 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1910.310	1.0	147.0	Vert	PK	2.47E-01	23.9	33.0	-9.1	High Ch. 1912.5 MHz, 5 MHz BW, 16-QAM, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1851.070	1.0	310.0	Vert	PK	2.37E-01	23.7	33.0	-9.3	Low Ch. 1860 MHz, 20 MHz BW, QPSK, 1 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1913.527	1.0	146.0	Vert	PK	2.25E-01	23.5	33.0	-9.5	High Ch. 1913.5 MHz, 3 MHz BW, 16-QAM, 1 RB, 7 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1914.300	1.0	146.0	Vert	PK	1.87E-01	22.7	33.0	-10.3	High Ch. 1914.3 MHz, 1.4 MHz BW, 16-QAM, 1 RB, 2 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1914.283	1.0	146.0	Vert	PK	1.75E-01	22.4	33.0	-10.6	High Ch. 1913.5 MHz, 1.4 MHz BW, QPSK, 1 RB, 2 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1913.510	1.0	146.0	Vert	PK	1.63E-01	22.1	33.0	-10.9	High Ch. 1913.5 MHz, 3 MHz BW, QPSK, 1 RB, 7 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1909.453	1.0	146.0	Vert	PK	1.42E-01	21.5	33.0	-11.5	High Ch. 1910 MHz, 10 MHz BW, 16-QAM, 25 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert
1909.553	1.0	145.0	Vert	PK	1.00E-01	20.0	33.0	-13.0	High Ch. 1910 MHz, 10 MHz BW, QPSK, 25 RB, 0 Offset, EUT Horz, Main Ant Vert, Aux Ant Vert