HCT CO.,LTD
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 FAX: +82-31-645-6401

FCC LTE REPORT

FCC Certification

Applicant Name:
LG Electronics MobileComm U.S.A., Inc.

Address:
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue:
September 08, 2015

Test Site/Location:
HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-R-1509-F013

HCT FRN: 0005866421

FCC ID:	**ZNFH960**
APPLICANT:	**LG Electronics MobileComm U.S.A., Inc.**

FCC Model(s):	LG-H960
Additional FCC Model(s):	LGH960, H960, LG-H960P, LGH960P, H960P, LG-H960AR, LGH960AR, H960AR, LG-H960YK, LGH960YK, H960YK
EUT Type:	Cellular/PCS GSM/WCDMA/LTE Phone with WLAN, Bluetooth and NFC
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§22, §24, §2

Standalone with normal cover

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	1M09G7D	QPSK	0.111	20.45
		1M09W7D	16QAM	0.089	19.48
LTE – Band2 (3)	1851.5 - 1908.5	2M70G7D	QPSK	0.102	20.11
		2M70W7D	16QAM	0.089	19.49
LTE – Band2 (5)	1852.5 - 1907.5	4M50G7D	QPSK	0.105	20.23
		4M50W7D	16QAM	0.093	19.69
LTE – Band2 (10)	1855.0 - 1905.0	9M01G7D	QPSK	0.109	20.38
		8M95W7D	16QAM	0.104	20.16
LTE – Band2 (15)	1857.5 - 1902.5	13M5G7D	QPSK	0.105	20.21
		13M5W7D	16QAM	0.091	19.60
LTE – Band2 (20)	1860.0 - 1900.0	17M9G7D	QPSK	0.103	20.14
		18M0W7D	16QAM	0.089	19.51

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max. Power (W)	Max. Power (dBm)
LTE – Band5 (1.4)	824.7 – 848.3	1M09G7D	QPSK	0.040	15.97
		1M09W7D	16QAM	0.032	15.11
LTE – Band5 (3)	825.5 – 847.5	2M71G7D	QPSK	0.038	15.83
		2M70W7D	16QAM	0.031	14.90
LTE – Band5 (5)	826.5 – 846.5	4M51G7D	QPSK	0.039	15.92
		4M50W7D	16QAM	0.032	15.03
LTE – Band5 (10)	829.0 – 844.0	8M98G7D	QPSK	0.041	16.13
		8M96W7D	16QAM	0.034	15.31

Standalone with wireless charging cover

Mode (MHz)	Tx Frequency (MHz)	Modulation	EIRP	
			Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	QPSK	0.109	20.36
		16QAM	0.092	19.64
LTE – Band2 (3)	1851.5 - 1908.5	QPSK	0.106	20.25
		16QAM	0.091	19.60
LTE – Band2 (5)	1852.5 - 1907.5	QPSK	0.109	20.38
		16QAM	0.096	19.81
LTE – Band2 (10)	1855.0 - 1905.0	QPSK	0.108	20.33
		16QAM	0.092	19.66
LTE – Band2 (15)	1857.5 - 1902.5	QPSK	0.108	20.34
		16QAM	0.089	19.50
LTE – Band2 (20)	1860.0 - 1900.0	QPSK	0.108	20.35
		16QAM	0.092	19.63

Mode (MHz)	Tx Frequency (MHz)	Modulation	ERP	
			Max. Power (W)	Max. Power (dBm)
LTE – Band5 (1.4)	824.7 – 848.3	QPSK	0.040	15.98
		16QAM	0.032	15.08
LTE – Band5 (3)	825.5 – 847.5	QPSK	0.038	15.81
		16QAM	0.031	14.90
LTE – Band5 (5)	826.5 – 846.5	QPSK	0.039	15.88
		16QAM	0.032	15.02
LTE – Band5 (10)	829.0 – 844.0	QPSK	0.039	15.91
		16QAM	0.032	15.08

With wireless charging pad(WCD-110)

Mode (MHz)	Tx Frequency (MHz)	Modulation	EIRP	
			Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	QPSK	0.054	17.30
		16QAM	0.044	16.44
LTE – Band2 (3)	1851.5 - 1908.5	QPSK	0.052	17.19
		16QAM	0.043	16.32
LTE – Band2 (5)	1852.5 - 1907.5	QPSK	0.054	17.32
		16QAM	0.044	16.41
LTE – Band2 (10)	1855.0 - 1905.0	QPSK	0.057	17.56
		16QAM	0.046	16.66
LTE – Band2 (15)	1857.5 - 1902.5	QPSK	0.054	17.29
		16QAM	0.042	16.27
LTE – Band2 (20)	1860.0 - 1900.0	QPSK	0.055	17.42
		16QAM	0.045	16.52

Mode (MHz)	Tx Frequency (MHz)	Modulation	ERP	
			Max. Power (W)	Max. Power (dBm)
LTE – Band5 (1.4)	824.7 – 848.3	QPSK	0.033	15.24
		16QAM	0.027	14.29
LTE – Band5 (3)	825.5 – 847.5	QPSK	0.034	15.26
		16QAM	0.027	14.37
LTE – Band5 (5)	826.5 – 846.5	QPSK	0.033	15.23
		16QAM	0.028	14.40
LTE – Band5 (10)	829.0 – 844.0	QPSK	0.034	15.35
		16QAM	0.028	14.50

With wireless charging pad(CT 06801)

Mode (MHz)	Tx Frequency (MHz)	Modulation	EIRP	
			Max. Power (W)	Max. Power (dBm)
LTE – Band2 (1.4)	1850.7 - 1909.3	QPSK	0.098	19.91
		16QAM	0.083	19.17
LTE – Band2 (3)	1851.5 - 1908.5	QPSK	0.094	19.75
		16QAM	0.074	18.71
LTE – Band2 (5)	1852.5 - 1907.5	QPSK	0.098	19.93
		16QAM	0.075	18.76
LTE – Band2 (10)	1855.0 - 1905.0	QPSK	0.100	20.02
		16QAM	0.083	19.19
LTE – Band2 (15)	1857.5 - 1902.5	QPSK	0.091	19.59
		16QAM	0.075	18.74
LTE – Band2 (20)	1860.0 - 1900.0	QPSK	0.094	19.72
		16QAM	0.079	19.00

Mode (MHz)	Tx Frequency (MHz)	Modulation	ERP	
			Max. Power (W)	Max. Power (dBm)
LTE – Band5 (1.4)	824.7 – 848.3	QPSK	0.041	16.17
		16QAM	0.033	15.25
LTE – Band5 (3)	825.5 – 847.5	QPSK	0.040	15.99
		16QAM	0.032	15.07
LTE – Band5 (5)	826.5 – 846.5	QPSK	0.041	16.12
		16QAM	0.033	15.21
LTE – Band5 (10)	829.0 – 844.0	QPSK	0.042	16.23
		16QAM	0.035	15.41

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a).

Report prepared by
: Jeong Ho Kim
Test engineer of RF Team

Approved by
: Sang Jun Lee
Manager of RF Team

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1509-F013	September 08, 2015	- First Approval Report

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics MobileComm U.S.A., Inc.
Address:	1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID:	ZNFH960
Application Type:	Certification
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§22, §24, §2
EUT Type:	Cellular/PCS GSM/WCDMA/LTE Phone with WLAN, Bluetooth and NFC
FCC Model(s):	LG-H960
Additional FCC Model(s):	LGH960, H960, LG-H960P, LGH960P, H960P, LG-H960AR, LGH960AR, H960AR, LG-H960YK, LGH960YK, H960YK
Tx Frequency:	1850.7 MHz – 1909.3 MHz (LTE – Band2 (1.4 MHz)) 1851.5 MHz – 1908.5 MHz (LTE – Band2 (3 MHz)) 1852.5 MHz – 1907.5 MHz (LTE – Band2 (5 MHz)) 1855.0 MHz – 1905.0 MHz (LTE – Band2 (10 MHz)) 1857.5 MHz – 1902.5 MHz (LTE – Band2 (15 MHz)) 1860.0 MHz – 1900.0 MHz (LTE – Band2 (20 MHz)) 824.7 MHz – 848.3 MHz (LTE – Band 5 (1.4 MHz)) 825.5 MHz – 847.5 MHz (LTE – Band 5 (3 MHz)) 826.5 MHz – 846.5 MHz (LTE – Band 5 (5 MHz)) 829.0 MHz – 844.0 MHz (LTE – Band 5 (10 MHz))
Max. RF Output Power:	**Standalone with normal cover**

Band 2 (1.4 MHz) :	0.111 W (QPSK) (20.45 dBm)
	0.089 W (16-QAM) (19.48 dBm)
Band 2 (3 MHz) :	0.102 W (QPSK) (20.11 dBm)
	0.089 W (16-QAM) (19.49 dBm)
Band 2 (5 MHz) :	0.105 W (QPSK) (20.23 dBm)
	0.093 W (16-QAM) (19.69 dBm)
Band 2 (10 MHz) :	0.109 W (QPSK) (20.38 dBm)
	0.104 W (16-QAM) (20.16 dBm)
Band 2 (15 MHz) :	0.105 W (QPSK) (20.21 dBm)
	0.091 W (16-QAM) (19.60 dBm)
Band 2 (20 MHz) :	0.103 W (QPSK) (20.14 dBm)
	0.089 W (16-QAM) (19.51 dBm)
Band 5 (1.4 MHz) :	0.040 W (QPSK) (15.97 dBm)
	0.032 W (16-QAM) (15.11 dBm)
Band 5 (3 MHz) :	0.038 W (QPSK) (15.83 dBm)
	0.031 W (16-QAM) (14.90 dBm)
Band 5 (5 MHz) :	0.039 W (QPSK) (15.92 dBm)
	0.032 W (16-QAM) (15.03 dBm)
Band 5 (10 MHz) :	0.041 W (QPSK) (16.13 dBm)
	0.034 W (16-QAM) (15.31 dBm)

Standalone with wireless charging cover

Band 2 (1.4 MHz) :	0.109 W (QPSK) (20.36 dBm)
	0.092 W (16-QAM) (19.64 dBm)
Band 2 (3 MHz) :	0.106 W (QPSK) (20.25 dBm)
	0.091 W (16-QAM) (19.60 dBm)
Band 2 (5 MHz) :	0.109 W (QPSK) (20.38 dBm)
	0.096 W (16-QAM) (19.81 dBm)
Band 2 (10 MHz) :	0.108 W (QPSK) (20.33 dBm)
	0.092 W (16-QAM) (19.66 dBm)
Band 2 (15 MHz) :	0.108 W (QPSK) (20.34 dBm)
	0.089 W (16-QAM) (19.50 dBm)
Band 2 (20 MHz) :	0.108 W (QPSK) (20.35 dBm)
	0.092 W (16-QAM) (19.63 dBm)
Band 5 (1.4 MHz) :	0.040 W (QPSK) (15.98 dBm)
	0.032 W (16-QAM) (15.08 dBm)
Band 5 (3 MHz) :	0.038 W (QPSK) (15.81 dBm)
	0.031 W (16-QAM) (14.90 dBm)
Band 5 (5 MHz) :	0.039 W (QPSK) (15.88 dBm)
	0.032 W (16-QAM) (15.02 dBm)
Band 5 (10 MHz) :	0.039 W (QPSK) (15.91 dBm)
	0.032 W (16-QAM) (15.08 dBm)

With wireless charging pad(WCD-110)

Band 2 (1.4 MHz) :	0.054 W (QPSK) (17.30 dBm)
	0.044 W (16-QAM) (16.44 dBm)
Band 2 (3 MHz) :	0.052 W (QPSK) (17.19 dBm)
	0.043 W (16-QAM) (16.32 dBm)
Band 2 (5 MHz) :	0.054 W (QPSK) (17.32 dBm)
	0.044 W (16-QAM) (16.41 dBm)
Band 2 (10 MHz) :	0.057 W (QPSK) (17.56 dBm)
	0.046 W (16-QAM) (16.66 dBm)
Band 2 (15 MHz) :	0.054 W (QPSK) (17.29 dBm)
	0.042 W (16-QAM) (16.27 dBm)
Band 2 (20 MHz) :	0.055 W (QPSK) (17.42 dBm)
	0.045 W (16-QAM) (16.52 dBm)
Band 5 (1.4 MHz) :	0.033 W (QPSK) (15.24 dBm)
	0.027 W (16-QAM) (14.29 dBm)
Band 5 (3 MHz) :	0.034 W (QPSK) (15.26 dBm)
	0.027 W (16-QAM) (14.37 dBm)
Band 5 (5 MHz) :	0.033 W (QPSK) (15.23 dBm)
	0.028 W (16-QAM) (14.40 dBm)
Band 5 (10 MHz) :	0.034 W (QPSK) (15.35 dBm)
	0.028 W (16-QAM) (14.50 dBm)

With wireless charging pad(CT 06801)

Band 2 (1.4 MHz) :	0.098 W (QPSK) (19.91 dBm)
	0.083 W (16-QAM) (19.17 dBm)
Band 2 (3 MHz) :	0.094 W (QPSK) (19.75 dBm)
	0.074 W (16-QAM) (18.71 dBm)
Band 2 (5 MHz) :	0.098 W (QPSK) (19.93 dBm)
	0.075 W (16-QAM) (18.76 dBm)
Band 2 (10 MHz) :	0.100 W (QPSK) (20.02 dBm)
	0.083 W (16-QAM) (19.19 dBm)
Band 2 (15 MHz) :	0.091 W (QPSK) (19.59 dBm)
	0.075 W (16-QAM) (18.74 dBm)
Band 2 (20 MHz) :	0.094 W (QPSK) (19.72 dBm)
	0.079 W (16-QAM) (19.00 dBm)
Band 5 (1.4 MHz) :	0.041 W (QPSK) (16.17 dBm)
	0.033 W (16-QAM) (15.25 dBm)
Band 5 (3 MHz) :	0.040 W (QPSK) (15.99 dBm)
	0.032 W (16-QAM) (15.07 dBm)
Band 5 (5 MHz) :	0.041 W (QPSK) (16.12 dBm)
	0.033 W (16-QAM) (15.21 dBm)
Band 5 (10 MHz) :	0.042 W (QPSK) (16.23 dBm)
	0.035 W (16-QAM) (15.41 dBm)

Emission Designator(s):

Band 2 (1.4 MHz) :	1M09G7D (QPSK) / 1M09W7D (16-QAM)
Band 2 (3 MHz)	2M70G7D (QPSK) / 2M70W7D (16-QAM)
Band 2 (5 MHz) :	4M50G7D (QPSK) / 4M50W7D (16-QAM)
Band 2 (10 MHz)	9M01G7D (QPSK) / 8M95W7D (16-QAM)
Band 2 (15 MHz) :	13M5G7D (QPSK) / 13M5W7D (16-QAM)
Band 2 (20 MHz)	17M9G7D (QPSK) / 18M0W7D (16-QAM)
Band 5 (1.4 MHz) :	1M09G7D (QPSK) / 1M09W7D (16-QAM)
Band 5 (3 MHz) :	2M71G7D (QPSK) / 2M70W7D (16-QAM)
Band 5 (5 MHz) :	4M51G7D (QPSK) / 4M50W7D (16-QAM)
Band 5 (10 MHz) :	8M98G7D (QPSK) / 8M96W7D (16-QAM)

Date(s) of Tests: July 29, 2015 ~ September 01, 2015

Antenna Specification

Manufacturer:	LS Mtron Co., Ltd.
Antenna type:	PIFA Antenna (Planar Inverted F)
Peak Gain:	Band 2 : -2.45 dBi
Peak Gain:	Band 5 : -3.55 dBi

2. INTRODUCTION

2.1. EUT DESCRIPTION

The LG Electronics MobileComm U.S.A., Inc. LG-H960 Cellular/PCS GSM/WCDMA/LTE Phone with WLAN, Bluetooth and NFC consists of LTE 2 and 5.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA**.

3. DESCRIPTION OF TESTS

3.1 ERP/ EIRP RADIATED POWER AND RADIATED SPURIOUS EMISSIONS

Note: ERP(Effective Radiated Power), EIRP(Effective Isotropic Radiated Power)

Test Procedure

Radiated emission measurements are performed in the Fully-anechoic chamber. The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-D-2010 Clause 2.2.17. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission. The level and position of the maximized emission is recorded with the spectrum analyzer using a RMS detector.
A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.
The power is calculated by the following formula;

$$P_{d(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dB)}$$

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

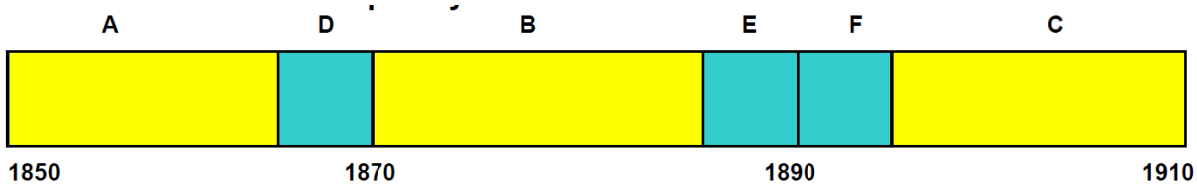
The maximum EIRP is calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration

Radiated spurious emissions

: Frequency Range : 30 MHz ~ 10^{th} Harmonics of highest channel fundamental frequency.

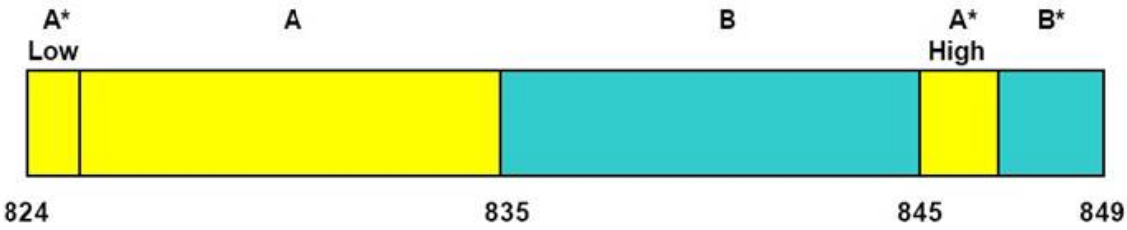
3.2 FREQUENCY RANGE

§ 24.229: PCS – Mobile Frequency Blocks



BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

§22.917(a): Cellular – Mobile Frequency Blocks



BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.3 PEAK-AVERAGE RATIO.

Test Procedure

Peak to Average Power Ratio is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r02, October 17, 2014, Section 5.7.

- Section 5.7.1 CCDF Procedure

a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
b) Set the number of counts to a value that stabilizes the measured CCDF curve;
c) Set the measurement interval as follows:
   1) for continuous transmissions, set to 1 ms,
   2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
d) Record the maximum PAPR level associated with a probability of 0.1%.

- Section 5.7.2 Alternate Procedure

Use one of the procedures presented in 5.1 to measure the total peak power and record as P_{Pk}. Use one of the applicable procedures presented 5.2 to measure the total average power and record as P_{Avg}. Determine the P.A.R. from: $P.A.R_{(dB)} = P_{Pk\ (dBm)} - P_{Avg\ (dBm)}$ (P_{Avg} = Average Power + Duty cycle Factor)

5.1.1 Peak power measurements with a spectrum/signal analyzer or EMI receiver

The following procedure can be used to determine the total peak output power.

a) Set the RBW ≥ OBW.
b) Set VBW ≥ 3 × RBW.
c) Set span ≥ 2 x RBW
d) Sweep time = auto couple.
e) Detector = peak.
f) Ensure that the number of measurement points ≥ span/RBW.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the peak amplitude level.

5.2.2 Procedures for use with a spectrum/signal analyzer when EUT cannot be configured to transmit continuously and sweep triggering/signal gating cannot be properly implemented

If the EUT cannot be configured to transmit continuously (burst duty cycle < 98%), then one of the following procedures can be used. The selection of the applicable procedure will depend on the characteristics of the measured burst duty cycle.

Measure the burst duty cycle with a spectrum/signal analyzer or EMC receiver can be used in zero-span mode if the response time and spacing between bins on the sweep are sufficient to permit accurate measurement of the burst on/off time of the transmitted signal.

5.2.2.2 Constant burst duty cycle

If the measured burst duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then:

a) Set span to at least 1.5 times the OBW.

b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.

c) Set VBW ≥ 3 x RBW.

d) Number of points in sweep ≥ 2 × span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

e) Sweep time = auto.

f) Detector = RMS (power averaging).

g) Set sweep trigger to “free run”.

h) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

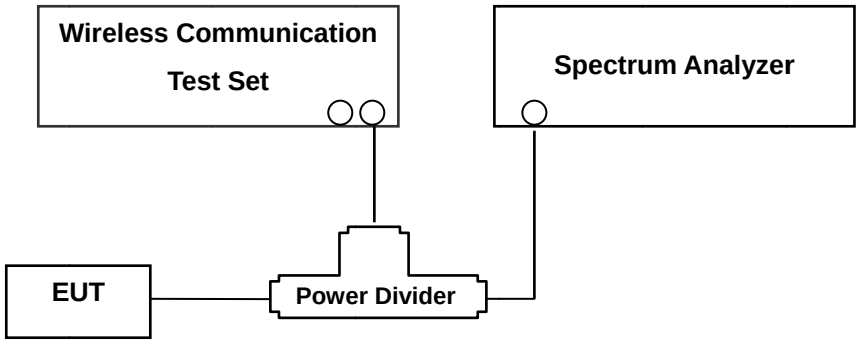
i) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

j) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).

For example, add 10 log (1/0.25) = 6 dB if the duty cycle is a constant 25%.

3.4 OCCUPIED BANDWIDTH.

Test set-up



(Configuration of conducted Emission measurement)

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

Test Procedure

OBW is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r02, October 17, 2014, Section 4.2.

The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels(low, middle and high operational range.)

The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

Test Procedure

Spurious and harmonic emissions at antenna terminal is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r02, October 17, 2014, Section 6.0.

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer.

The EUT was setup to maximum output power at its lowest channel. The Resolution BW of the analyzer is set to 1 % of the emission bandwidth to show compliance with the -13 dBm limit, in the 1 MHz bands immediately outside and adjacent to the edge of the frequency block. The 1 MHz RBW was used to scan from 30 MHz to 10th Harmonics. A display line was placed at -13 dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

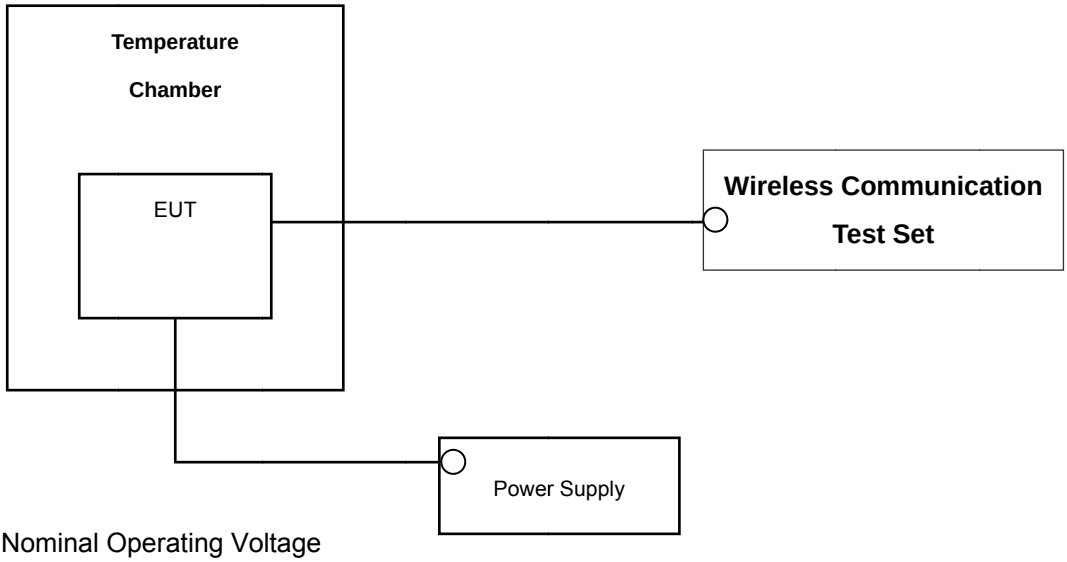
- Band Edge Requirement : In the 1MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13 dBm.

NOTES: The analyzer plot offsets were determined by below conditions.

- For LTE Band 2, total offset 27.5 dBm = 20 dBm attenuator + 6 dBm Divider + 1.5 dBm RF cables.
- For LTE Band 5, total offset 26.9 dB = 20 dB attenuator + 6 dB Divider + 0.9 dB RF cables.

3.6 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Test Set-up



* Nominal Operating Voltage

Test Procedure

Frequency stability is tested in accordance with ANSI/TIA-603-D-2010 section 2.2.2

The frequency stability of the transmitter is measured by:
a.) **Temperature:** The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from the end point to 100 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification — the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block(LTE Band2). The frequency stability of the transmitter shall be maintained within ± 0.000 25 %(± 2.5 ppm) of the center frequency. (LTE Band5).

Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
1. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

2. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

NOTE: The EUT is tested down to the battery endpoint.

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Interval	Calibration Due
LG-Innotek	WCD-110 / Wireless Charger	MSIP-RMS-LGE-WCD 110		
DURACELL	DURACELL POWERMAT(CT 06801) / Powermat	34112333855L		
Agilent	N1921A/ Power Sensor	MY45241059	Annual	07/09/2016
Agilent	N1911A/ Power Meter	MY45100523	Annual	07/09/2016
MITEQ	AMF-6D-001180-35-20P/AMP	1081666	Annual	09/03/2016
Wainwright	WHK1.2/15G-10EF/H.P.F	4	Annual	04/27/2016
Wainwright	WHK3.3/18G-10EF/H.P.F	2	Annual	04/27/2016
Hewlett Packard	11667B / Power Splitter	10545	Annual	02/16/2016
Hewlett Packard	11667B / Power Splitter	11275	Annual	04/29/2016
ITECT	IT6720/ Power Supply	010002156267001199	Annual	11/04/2015
Schwarzbeck	UHAP/ Dipole Antenna	557	Biennial	03/23/2017
Schwarzbeck	UHAP/ Dipole Antenna	558	Biennial	03/23/2017
EXP	EX-TH400/ Chamber	None	Annual	05/29/2016
Schwarzbeck	BBHA 9120D/ Horn Antenna	147	Biennial	09/01/2016
Schwarzbeck	BBHA 9120D/ Horn Antenna	1299	Biennial	05/15/2017
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	Biennial	04/30/2017
Schwarzbeck	BBHA 9170/ Horn Antenna(15~35GHz)	BBHA9170124	Biennial	04/30/2017
Agilent	N9020A/ Signal Analyzer	MY51110063	Annual	04/29/2016
WEINSCHEL	ATTENUATOR	BR0592	Annual	10/22/2015
REOHDE&SCHWARZ	FSV40/Spectrum Analyzer	1307.9002K40-100931-NK	Annual	06/04/2016
Anritsu Corp	MT8820C/ Wideband Radio Communication Tester	6200863156	Annual	03/24/2016

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS
2.1051, 22.917(a), 24.238(a)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions		PASS
2.1046	*Conducted Output Power	N/A		PASS
24.232(d)	Peak- to- Average Ratio	< 13 dB		PASS
2.1055, 22.355	Frequency stability / variation of ambient temperature	< 2.5 ppm (Part22)		PASS
24.235		Emission must remain in band (Part24)		
22.913(a)(2)	Effective Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS
24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP		PASS
2.1053, 22.917(a), 24.238(a)	Radiated Spurious and Harmonic Emissions	< 43 + 10log10 (P[Watts]) for all out-of band emissions		PASS

*See SAR Report

6. SAMPLE CALCULATION

A. ERP Sample Calculation

Mode	Ch./ Freq.		Measured Level(dBm)	Substitude LEVEL(dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
	channel	Freq.(MHz)						W	dBm
LTE Band5	20525	836.60	-6.73	40.89	-10.54	0.96	V	0.869	29.39

ERP = SubstitudeLEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a wooden tripod is 2.5 meter above test site ground level.
2) During the test , the turn table is rotated and the antenna height is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power (**ERP**).

B. Emission Designator

QPSK Modulation

5MHz Bandwidth
Emission Designator = 4M48G7D
LTE BW = 4.48 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

10MHz Bandwidth
Emission Designator = 8M95G7D
LTE BW = 8.95 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

16QAM Modulation

5MHz Bandwidth
Emission Designator = 4M48W7D
LTE BW = 4.48 MHz
W = main carrier modulated in a combination of two or more of the following modes; amplitude, angle, pulse
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

10MHz Bandwidth
Emission Designator = 8M95W7D
LTE BW = 8.95 MHz
W = main carrier modulated in a combination of two or more of the following modes; amplitude, angle, pulse
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

7. TEST DATA

7.1 EQUIVALENT ISOTROPIC RADIATED POWER (Band 2)_Standalone with normal cover

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1850.7	1.4 MHz	QPSK	-20.92	11.77	10.04	1.36	H	0.111	20.45
		16-QAM	-21.89	10.80	10.04	1.36	H	0.089	19.48
1880.0		QPSK	-22.41	10.55	10.05	1.37	H	0.084	19.23
		16-QAM	-23.32	9.64	10.05	1.37	H	0.068	18.32
1909.3		QPSK	-23.38	9.82	10.06	1.38	H	0.071	18.50
		16-QAM	-24.01	9.19	10.06	1.38	H	0.061	17.87

Equivalent Isotropic Radiated Power Output Data (1.4 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1851.5	3 MHz	QPSK	-21.26	11.43	10.04	1.36	H	0.102	20.11
		16-QAM	-21.88	10.81	10.04	1.36	H	0.089	19.49
1880.0		QPSK	-22.46	10.50	10.05	1.37	H	0.083	19.18
		16-QAM	-23.34	9.62	10.05	1.37	H	0.068	18.30
1908.5		QPSK	-23.36	9.81	10.06	1.38	H	0.071	18.49
		16-QAM	-24.04	9.13	10.06	1.38	H	0.060	17.81

Equivalent Isotropic Radiated Power Output Data (3 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1852.5	5 MHz	QPSK	-21.14	11.55	10.04	1.36	H	0.105	20.23
		16-QAM	-21.68	11.01	10.04	1.36	H	0.093	19.69
1880.0		QPSK	-22.41	10.55	10.05	1.37	H	0.084	19.23
		16-QAM	-23.16	9.80	10.05	1.37	H	0.070	18.48
1907.5		QPSK	-23.19	9.95	10.06	1.38	H	0.073	18.63
		16-QAM	-24.00	9.14	10.06	1.38	H	0.060	17.82

Equivalent Isotropic Radiated Power Output Data (5 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1855.0	10 MHz	QPSK	-20.99	11.70	10.04	1.36	H	0.109	20.38
		16-QAM	-21.21	11.48	10.04	1.36	H	0.104	20.16
1880.0		QPSK	-22.03	10.92	10.05	1.37	H	0.091	19.60
		16-QAM	-22.84	10.11	10.05	1.37	H	0.076	18.79
1905.0		QPSK	-23.05	10.01	10.05	1.38	H	0.074	18.68
		16-QAM	-23.91	9.15	10.05	1.38	H	0.060	17.82

Equivalent Isotropic Radiated Power Output Data (10 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1857.5	15 MHz	QPSK	-21.16	11.53	10.04	1.36	H	0.105	20.21
		16-QAM	-21.77	10.92	10.04	1.36	H	0.091	19.60
1880.0		QPSK	-22.13	10.81	10.04	1.36	H	0.089	19.49
		16-QAM	-23.15	9.79	10.04	1.36	H	0.070	18.47
1902.5		QPSK	-22.85	10.20	10.05	1.38	H	0.077	18.87
		16-QAM	-23.79	9.26	10.05	1.38	H	0.062	17.93

Equivalent Isotropic Radiated Power Output Data (15 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1860.0	20 MHz	QPSK	-21.23	11.46	10.04	1.36	H	0.103	20.14
		16-QAM	-21.86	10.83	10.04	1.36	H	0.089	19.51
1880.0		QPSK	-21.88	11.05	10.04	1.36	H	0.094	19.73
		16-QAM	-22.85	10.08	10.04	1.36	H	0.075	18.76
1900.0		QPSK	-22.82	10.24	10.05	1.38	H	0.078	18.91
		16-QAM	-23.48	9.58	10.05	1.38	H	0.067	18.25

Equivalent Isotropic Radiated Power Output Data (20 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. Turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals

of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

7.2 EFFECTIVE RADIATED POWER (Band 5) _Standalone with normal cover

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
824.7	1.4 MHz	QPSK	-34.49	27.44	-10.59	0.88	H	0.040	15.97
		16-QAM	-35.35	26.58	-10.59	0.88	H	0.032	15.11
836.5		QPSK	-34.79	26.97	-10.54	0.89	H	0.036	15.54
		16-QAM	-35.78	25.98	-10.54	0.89	H	0.028	14.55
848.3		QPSK	-34.66	26.30	-10.49	0.89	H	0.031	14.92
		16-QAM	-35.50	25.46	-10.49	0.89	H	0.026	14.08

Effective Radiated Power Data (1.4 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
825.5	3 MHz	QPSK	-34.63	27.30	-10.59	0.88	H	0.038	15.83
		16-QAM	-35.56	26.37	-10.59	0.88	H	0.031	14.90
836.5		QPSK	-34.59	27.11	-10.54	0.89	H	0.037	15.68
		16-QAM	-35.56	26.14	-10.54	0.89	H	0.030	14.71
847.5		QPSK	-34.66	26.41	-10.50	0.89	H	0.032	15.02
		16-QAM	-35.51	25.56	-10.50	0.89	H	0.026	14.17

Effective Radiated Power Data (3 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
826.5	5 MHz	QPSK	-34.52	27.39	-10.59	0.88	H	0.039	15.92
		16-QAM	-35.41	26.50	-10.59	0.88	H	0.032	15.03
836.5		QPSK	-34.55	27.20	-10.55	0.89	H	0.038	15.76
		16-QAM	-35.57	26.18	-10.55	0.89	H	0.030	14.74
846.5		QPSK	-34.48	26.91	-10.51	0.89	H	0.036	15.51
		16-QAM	-35.29	26.10	-10.51	0.89	H	0.029	14.70

Effective Radiated Power Data (5 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
829.0	10 MHz	QPSK	-34.44	27.44	-10.59	0.88	H	0.040	15.97
		16-QAM	-35.26	26.62	-10.59	0.88	H	0.033	15.15
836.5		QPSK	-34.32	27.58	-10.56	0.89	H	0.041	16.13
		16-QAM	-35.14	26.76	-10.56	0.89	H	0.034	15.31
844.0		QPSK	-34.40	27.12	-10.52	0.89	H	0.037	15.71
		16-QAM	-35.27	26.25	-10.52	0.89	H	0.030	14.84

Effective Radiated Power Data (10 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

NOTES:

Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

7.3 EQUIVALENT ISOTROPIC RADIATED POWER (Band 2)_Standalone with wireless charging cover

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1850.7	1.4 MHz	QPSK	-21.01	11.68	10.04	1.36	H	0.109	20.36
		16-QAM	-21.73	10.96	10.04	1.36	H	0.092	19.64
1880.0		QPSK	-21.54	11.42	10.05	1.37	H	0.102	20.10
		16-QAM	-22.33	10.63	10.05	1.37	H	0.085	19.31
1909.3		QPSK	-22.73	10.47	10.06	1.38	H	0.082	19.15
		16-QAM	-23.53	9.67	10.06	1.38	H	0.068	18.35

Equivalent Isotropic Radiated Power Output Data (1.4 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1851.5	3 MHz	QPSK	-21.12	11.57	10.04	1.36	H	0.106	20.25
		16-QAM	-21.77	10.92	10.04	1.36	H	0.091	19.60
1880.0		QPSK	-21.52	11.44	10.05	1.37	H	0.103	20.12
		16-QAM	-22.36	10.60	10.05	1.37	H	0.085	19.28
1908.5		QPSK	-22.72	10.45	10.06	1.38	H	0.082	19.13
		16-QAM	-23.55	9.62	10.06	1.38	H	0.068	18.30

Equivalent Isotropic Radiated Power Output Data (3 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1852.5	5 MHz	QPSK	-20.99	11.70	10.04	1.36	H	0.109	20.38
		16-QAM	-21.56	11.13	10.04	1.36	H	0.096	19.81
1880.0		QPSK	-21.45	11.51	10.05	1.37	H	0.104	20.19
		16-QAM	-22.23	10.73	10.05	1.37	H	0.087	19.41
1907.5		QPSK	-22.55	10.59	10.06	1.38	H	0.084	19.27
		16-QAM	-23.37	9.77	10.06	1.38	H	0.070	18.45

Equivalent Isotropic Radiated Power Output Data (5 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1855.0	10 MHz	QPSK	-21.04	11.65	10.04	1.36	H	0.108	20.33
		16-QAM	-21.71	10.98	10.04	1.36	H	0.092	19.66
1880.0		QPSK	-21.30	11.65	10.05	1.37	H	0.108	20.33
		16-QAM	-22.07	10.88	10.05	1.37	H	0.090	19.56
1905.0		QPSK	-22.44	10.62	10.05	1.38	H	0.085	19.29
		16-QAM	-23.23	9.83	10.05	1.38	H	0.071	18.50

Equivalent Isotropic Radiated Power Output Data (10 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1857.5	15 MHz	QPSK	-21.03	11.66	10.04	1.36	H	0.108	20.34
		16-QAM	-21.87	10.82	10.04	1.36	H	0.089	19.50
1880.0		QPSK	-21.35	11.59	10.04	1.36	H	0.106	20.27
		16-QAM	-22.47	10.47	10.04	1.36	H	0.082	19.15
1902.5		QPSK	-22.28	10.77	10.05	1.38	H	0.088	19.44
		16-QAM	-23.23	9.82	10.05	1.38	H	0.071	18.49

Equivalent Isotropic Radiated Power Output Data (15 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1860.0	20 MHz	QPSK	-21.23	11.46	10.04	1.36	H	0.103	20.14
		16-QAM	-21.74	10.95	10.04	1.36	H	0.092	19.63
1880.0		QPSK	-21.26	11.67	10.04	1.36	H	0.108	20.35
		16-QAM	-22.15	10.78	10.04	1.36	H	0.088	19.46
1900.0		QPSK	-21.98	11.08	10.05	1.38	H	0.094	19.75
		16-QAM	-22.69	10.37	10.05	1.38	H	0.080	19.04

Equivalent Isotropic Radiated Power Output Data (20 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. Turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals

of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

7.4 EFFECTIVE RADIATED POWER (Band 5) _Standalone with wireless charging cover

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
824.7	1.4 MHz	QPSK	-34.48	27.45	-10.59	0.88	V	0.040	15.98
		16-QAM	-35.38	26.55	-10.59	0.88	V	0.032	15.08
836.5		QPSK	-34.69	27.07	-10.54	0.89	V	0.037	15.64
		16-QAM	-35.53	26.23	-10.54	0.89	V	0.030	14.80
848.3		QPSK	-35.03	25.93	-10.49	0.89	V	0.029	14.55
		16-QAM	-35.75	25.21	-10.49	0.89	V	0.024	13.83

Effective Radiated Power Data (1.4 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
825.5	3 MHz	QPSK	-34.65	27.28	-10.59	0.88	V	0.038	15.81
		16-QAM	-35.56	26.37	-10.59	0.88	V	0.031	14.90
836.5		QPSK	-34.80	26.90	-10.54	0.89	V	0.035	15.47
		16-QAM	-35.77	25.93	-10.54	0.89	V	0.028	14.50
847.5		QPSK	-35.04	26.03	-10.50	0.89	V	0.029	14.64
		16-QAM	-35.90	25.17	-10.50	0.89	V	0.024	13.78

Effective Radiated Power Data (3 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
826.5	5 MHz	QPSK	-34.56	27.35	-10.59	0.88	V	0.039	15.88
		16-QAM	-35.42	26.49	-10.59	0.88	V	0.032	15.02
836.5		QPSK	-34.84	26.91	-10.55	0.89	V	0.035	15.47
		16-QAM	-35.72	26.03	-10.55	0.89	V	0.029	14.59
846.5		QPSK	-34.84	26.55	-10.51	0.89	V	0.033	15.15
		16-QAM	-35.59	25.80	-10.51	0.89	V	0.028	14.40

Effective Radiated Power Data (5 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
829.0	10 MHz	QPSK	-34.50	27.38	-10.59	0.88	V	0.039	15.91
		16-QAM	-35.33	26.55	-10.59	0.88	V	0.032	15.08
836.5		QPSK	-34.61	27.29	-10.56	0.89	V	0.038	15.84
		16-QAM	-35.43	26.47	-10.56	0.89	V	0.032	15.02
844.0		QPSK	-34.63	26.89	-10.52	0.89	V	0.035	15.48
		16-QAM	-35.52	26.00	-10.52	0.89	V	0.029	14.59

Effective Radiated Power Data (10 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

NOTES:

Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is vertical polarization in LTE mode.

7.5 EQUIVALENT ISOTROPIC RADIATED POWER (Band 2)_With wireless charging pad(WCD-110)

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1850.7	1.4 MHz	QPSK	-24.49	8.20	10.04	1.36	H	0.049	16.88
		16-QAM	-25.18	7.51	10.04	1.36	H	0.042	16.19
1880.0		QPSK	-24.34	8.62	10.05	1.37	H	0.054	17.30
		16-QAM	-25.20	7.76	10.05	1.37	H	0.044	16.44
1909.3		QPSK	-24.89	8.31	10.06	1.38	H	0.050	16.99
		16-QAM	-25.57	7.63	10.06	1.38	H	0.043	16.31

Equivalent Isotropic Radiated Power Output Data (1.4 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1851.5	3 MHz	QPSK	-24.65	8.04	10.04	1.36	H	0.047	16.72
		16-QAM	-25.31	7.38	10.04	1.36	H	0.040	16.06
1880.0		QPSK	-24.45	8.51	10.05	1.37	H	0.052	17.19
		16-QAM	-25.32	7.64	10.05	1.37	H	0.043	16.32
1908.5		QPSK	-24.88	8.29	10.06	1.38	H	0.050	16.97
		16-QAM	-25.67	7.50	10.06	1.38	H	0.042	16.18

Equivalent Isotropic Radiated Power Output Data (3 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1852.5	5 MHz	QPSK	-24.55	8.14	10.04	1.36	H	0.048	16.82
		16-QAM	-25.18	7.51	10.04	1.36	H	0.042	16.19
1880.0		QPSK	-24.32	8.64	10.05	1.37	H	0.054	17.32
		16-QAM	-25.23	7.73	10.05	1.37	H	0.044	16.41
1907.5		QPSK	-24.68	8.46	10.06	1.38	H	0.052	17.14
		16-QAM	-25.55	7.59	10.06	1.38	H	0.042	16.27

Equivalent Isotropic Radiated Power Output Data (5 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1855.0	10 MHz	QPSK	-24.43	8.26	10.04	1.36	H	0.049	16.94
		16-QAM	-25.08	7.61	10.04	1.36	H	0.043	16.29
1880.0		QPSK	-24.07	8.88	10.05	1.37	H	0.057	17.56
		16-QAM	-24.97	7.98	10.05	1.37	H	0.046	16.66
1905.0		QPSK	-24.72	8.34	10.05	1.38	H	0.050	17.01
		16-QAM	-25.49	7.57	10.05	1.38	H	0.042	16.24

Equivalent Isotropic Radiated Power Output Data (10 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1857.5	15 MHz	QPSK	-24.32	8.37	10.04	1.36	H	0.051	17.05
		16-QAM	-25.36	7.33	10.04	1.36	H	0.040	16.01
1880.0		QPSK	-24.33	8.61	10.04	1.36	H	0.054	17.29
		16-QAM	-25.35	7.59	10.04	1.36	H	0.042	16.27
1902.5		QPSK	-24.69	8.36	10.05	1.38	H	0.050	17.03
		16-QAM	-25.62	7.43	10.05	1.38	H	0.041	16.10

Equivalent Isotropic Radiated Power Output Data (15 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1860.0	20 MHz	QPSK	-24.71	7.98	10.04	1.36	H	0.046	16.66
		16-QAM	-25.13	7.56	10.04	1.36	H	0.042	16.24
1880.0		QPSK	-24.19	8.74	10.04	1.36	H	0.055	17.42
		16-QAM	-25.09	7.84	10.04	1.36	H	0.045	16.52
1900.0		QPSK	-24.56	8.50	10.05	1.38	H	0.052	17.17
		16-QAM	-25.37	7.69	10.05	1.38	H	0.043	16.36

Equivalent Isotropic Radiated Power Output Data (20 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. Turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals

of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

7.6 EFFECTIVE RADIATED POWER (Band 5) _With wireless charging pad(WCD-110)

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
824.7	1.4 MHz	QPSK	-35.22	26.71	-10.59	0.88	V	0.033	15.24
		16-QAM	-36.17	25.76	-10.59	0.88	V	0.027	14.29
836.5		QPSK	-35.12	26.64	-10.54	0.89	V	0.033	15.21
		16-QAM	-36.13	25.63	-10.54	0.89	V	0.026	14.20
848.3		QPSK	-34.96	26.00	-10.49	0.89	V	0.029	14.62
		16-QAM	-35.79	25.17	-10.49	0.89	V	0.024	13.79

Effective Radiated Power Data (1.4 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
825.5	3 MHz	QPSK	-35.20	26.73	-10.59	0.88	V	0.034	15.26
		16-QAM	-36.09	25.84	-10.59	0.88	V	0.027	14.37
836.5		QPSK	-35.30	26.40	-10.54	0.89	V	0.031	14.97
		16-QAM	-36.22	25.48	-10.54	0.89	V	0.025	14.05
847.5		QPSK	-35.25	25.82	-10.50	0.89	V	0.028	14.43
		16-QAM	-35.88	25.19	-10.50	0.89	V	0.024	13.80

Effective Radiated Power Data (3 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
826.5	5 MHz	QPSK	-35.21	26.70	-10.59	0.88	V	0.033	15.23
		16-QAM	-36.04	25.87	-10.59	0.88	V	0.028	14.40
836.5		QPSK	-35.33	26.42	-10.55	0.89	V	0.032	14.98
		16-QAM	-36.27	25.48	-10.55	0.89	V	0.025	14.04
846.5		QPSK	-34.93	26.46	-10.51	0.89	V	0.032	15.06
		16-QAM	-35.78	25.61	-10.51	0.89	V	0.026	14.21

Effective Radiated Power Data (5 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
829.0	10 MHz	QPSK	-35.06	26.82	-10.59	0.88	V	0.034	15.35
		16-QAM	-35.91	25.97	-10.59	0.88	V	0.028	14.50
836.5		QPSK	-35.23	26.67	-10.56	0.89	V	0.033	15.22
		16-QAM	-36.08	25.82	-10.56	0.89	V	0.027	14.37
844.0		QPSK	-34.91	26.61	-10.52	0.89	V	0.033	15.20
		16-QAM	-35.68	25.84	-10.52	0.89	V	0.028	14.43

Effective Radiated Power Data (10 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

NOTES:

Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is vertical polarization in LTE mode.

7.7 EQUIVALENT ISOTROPIC RADIATED POWER (Band 2)_With wireless charging pad(CT 06801)

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1850.7	1.4 MHz	QPSK	-21.79	10.90	10.04	1.36	H	0.091	19.58
		16-QAM	-22.41	10.28	10.04	1.36	H	0.079	18.96
1880.0		QPSK	-21.99	10.97	10.05	1.37	H	0.092	19.65
		16-QAM	-22.79	10.17	10.05	1.37	H	0.077	18.85
1909.3		QPSK	-21.97	11.23	10.06	1.38	H	0.098	19.91
		16-QAM	-22.71	10.49	10.06	1.38	H	0.083	19.17

Equivalent Isotropic Radiated Power Output Data (1.4 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1851.5	3 MHz	QPSK	-22.23	10.46	10.04	1.36	H	0.082	19.14
		16-QAM	-22.93	9.76	10.04	1.36	H	0.070	18.44
1880.0		QPSK	-22.40	10.56	10.05	1.37	H	0.084	19.24
		16-QAM	-22.95	10.01	10.05	1.37	H	0.074	18.69
1908.5		QPSK	-22.10	11.07	10.06	1.38	H	0.094	19.75
		16-QAM	-23.14	10.03	10.06	1.38	H	0.074	18.71

Equivalent Isotropic Radiated Power Output Data (3 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1852.5	5 MHz	QPSK	-22.00	10.69	10.04	1.36	H	0.086	19.37
		16-QAM	-22.63	10.06	10.04	1.36	H	0.075	18.74
1880.0		QPSK	-22.10	10.86	10.05	1.37	H	0.090	19.54
		16-QAM	-22.98	9.98	10.05	1.37	H	0.073	18.66
1907.5		QPSK	-21.89	11.25	10.06	1.38	H	0.098	19.93
		16-QAM	-23.06	10.08	10.06	1.38	H	0.075	18.76

Equivalent Isotropic Radiated Power Output Data (5 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1855.0	10 MHz	QPSK	-21.81	10.88	10.04	1.36	H	0.090	19.56
		16-QAM	-22.18	10.51	10.04	1.36	H	0.083	19.19
1880.0		QPSK	-21.61	11.34	10.05	1.37	H	0.100	20.02
		16-QAM	-22.57	10.38	10.05	1.37	H	0.081	19.06
1905.0		QPSK	-22.07	10.99	10.05	1.38	H	0.092	19.66
		16-QAM	-22.81	10.25	10.05	1.38	H	0.078	18.92

Equivalent Isotropic Radiated Power Output Data (10 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1857.5	15 MHz	QPSK	-21.88	10.81	10.04	1.36	H	0.089	19.49
		16-QAM	-22.93	9.76	10.04	1.36	H	0.070	18.44
1880.0		QPSK	-22.03	10.91	10.04	1.36	H	0.091	19.59
		16-QAM	-23.30	9.64	10.04	1.36	H	0.068	18.32
1902.5		QPSK	-22.14	10.91	10.05	1.38	H	0.091	19.58
		16-QAM	-22.98	10.07	10.05	1.38	H	0.075	18.74

Equivalent Isotropic Radiated Power Output Data (15 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBi)	C.L	Pol	EIRP	
								W	dBm
1860.0	20 MHz	QPSK	-22.08	10.61	10.04	1.36	H	0.085	19.29
		16-QAM	-22.86	9.83	10.04	1.36	H	0.071	18.51
1880.0		QPSK	-22.04	10.89	10.04	1.36	H	0.091	19.57
		16-QAM	-22.80	10.13	10.04	1.36	H	0.076	18.81
1900.0		QPSK	-22.01	11.05	10.05	1.38	H	0.094	19.72
		16-QAM	-22.73	10.33	10.05	1.38	H	0.079	19.00

Equivalent Isotropic Radiated Power Output Data (20 MHz Band 2 LTE)

Note: All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. Turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals

of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

7.8 EFFECTIVE RADIATED POWER (Band 5) _With wireless charging pad(CT 06801)

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
824.7	1.4 MHz	QPSK	-34.29	27.64	-10.59	0.88	H	0.041	16.17
		16-QAM	-35.21	26.72	-10.59	0.88	H	0.033	15.25
836.5		QPSK	-34.49	27.27	-10.54	0.89	H	0.038	15.84
		16-QAM	-35.42	26.34	-10.54	0.89	H	0.031	14.91
848.3		QPSK	-35.75	25.21	-10.49	0.89	H	0.024	13.83
		16-QAM	-36.61	24.35	-10.49	0.89	H	0.020	12.97

Effective Radiated Power Data (1.4 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
825.5	3 MHz	QPSK	-34.47	27.46	-10.59	0.88	H	0.040	15.99
		16-QAM	-35.39	26.54	-10.59	0.88	H	0.032	15.07
836.5		QPSK	-34.58	27.12	-10.54	0.89	H	0.037	15.69
		16-QAM	-35.51	26.19	-10.54	0.89	H	0.030	14.76
847.5		QPSK	-35.56	25.51	-10.50	0.89	H	0.026	14.12
		16-QAM	-36.44	24.63	-10.50	0.89	H	0.021	13.24

Effective Radiated Power Data (3 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
826.5	5 MHz	QPSK	-34.32	27.59	-10.59	0.88	H	0.041	16.12
		16-QAM	-35.23	26.68	-10.59	0.88	H	0.033	15.21
836.5		QPSK	-34.50	27.25	-10.55	0.89	H	0.038	15.81
		16-QAM	-35.46	26.29	-10.55	0.89	H	0.031	14.85
846.5		QPSK	-35.06	26.33	-10.51	0.89	H	0.031	14.93
		16-QAM	-35.95	25.44	-10.51	0.89	H	0.025	14.04

Effective Radiated Power Data (5 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

Freq (MHz)	Bandwidth	Modulation	Measured Level (dBm)	Substitude Level (dBm)	Ant. Gain(dBd)	C.L	Pol	ERP	
								W	dBm
829.0	10 MHz	QPSK	-34.31	27.57	-10.59	0.88	H	0.041	16.10
		16-QAM	-35.17	26.71	-10.59	0.88	H	0.033	15.24
836.5		QPSK	-34.22	27.68	-10.56	0.89	H	0.042	16.23
		16-QAM	-35.04	26.86	-10.56	0.89	H	0.035	15.41
844.0		QPSK	-34.65	26.87	-10.52	0.89	H	0.035	15.46
		16-QAM	-35.49	26.03	-10.52	0.89	H	0.029	14.62

Effective Radiated Power Data (10 MHz Band 5 LTE)

Note: All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case

NOTES:

Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For LTE signals, RBW = 1-5% of the OBW, not to exceed 1MHz, VBW ≥ 3 x RBW, Detector = RMS. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

7.9 RADIATED SPURIOUS EMISSIONS_Standalone with normal cover

7.9.1 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1850.70 MHz

▣ MEASURED OUTPUT POWER: 20.45 dBm = 0.111 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.45 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18607 (1850.7)	3,701.40	-55.50	12.32	-59.16	2.02	H	-48.86	69.31
	5,552.10	-53.68	13.02	-52.56	2.52	H	-42.06	62.51
	7,402.80	-46.76	11.06	-37.39	2.91	H	-29.24	49.69
18900 (1880.0)	3,760.00	-55.51	12.29	-59.11	1.93	V	-48.75	69.20
	5,640.00	-50.93	13.12	-50.00	2.57	H	-39.45	59.90
	7,520.00	-49.03	11.09	-40.19	3.03	V	-32.13	52.58
19193 (1909.3)	3,818.60	-56.20	12.28	-59.23	2.04	V	-48.99	69.44
	5,727.90	-50.97	13.06	-49.78	2.55	V	-39.27	59.72
	7,637.20	-50.31	11.37	-40.87	3.13	H	-32.63	53.08

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.2 RADIATED SPURIOUS EMISSIONS (3 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1851.50 MHz

▣ MEASURED OUTPUT POWER: 20.11 dBm = 0.102 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.11 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18615 (1851.5)	3,703.00	-54.24	12.32	-57.88	2.02	H	-47.58	67.69
	5,554.50	-56.10	13.03	-54.99	2.52	V	-44.48	64.59
	7,406.00	-47.34	11.05	-37.90	2.92	H	-29.77	49.88
18900 (1880.0)	3,760.00	-55.79	12.29	-59.39	1.93	H	-49.03	69.14
	5,640.00	-52.49	13.12	-51.56	2.57	V	-41.01	61.12
	7,520.00	-47.66	11.09	-38.82	3.03	H	-30.76	50.87
19185 (1908.5)	3,817.00	-56.00	12.28	-59.11	2.04	H	-48.87	68.98
	5,725.50	-50.68	13.07	-49.49	2.56	V	-38.98	59.09
	7,634.00	-50.12	11.37	-40.67	3.16	H	-32.46	52.57

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.3 RADIATED SPURIOUS EMISSIONS (5 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1852.50 MHz

▣ MEASURED OUTPUT POWER: 20.23 dBm = 0.105 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.23 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18625 (1852.5)	3,705.00	-55.32	12.32	-58.95	2.01	H	-48.64	68.87
	5,557.50	-56.66	13.04	-55.54	2.53	V	-45.03	65.26
	7,410.00	-46.16	11.05	-36.66	2.92	H	-28.53	48.76
18900 (1880.0)	3,760.00	-58.74	12.29	-62.34	1.93	H	-51.98	72.21
	5,640.00	-51.52	13.12	-50.59	2.57	V	-40.04	60.27
	7,520.00	-46.66	11.09	-37.82	3.03	H	-29.76	49.99
19175 (1907.5)	3,815.00	-59.48	12.29	-62.69	2.04	V	-52.44	72.67
	5,722.50	-50.35	13.08	-49.16	2.57	V	-38.65	58.88
	7,630.00	-50.02	11.36	-40.56	3.19	H	-32.39	52.62

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.4 RADIATED SPURIOUS EMISSIONS (10 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1855.00 MHz

▣ MEASURED OUTPUT POWER: 20.38 dBm = 0.109 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.38 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18650 (1855.0)	3,710.00	-55.18	12.31	-58.76	1.99	H	-48.44	68.82
	5,565.00	-55.24	13.05	-54.08	2.51	H	-43.54	63.92
	7,420.00	-46.59	11.05	-37.11	2.93	H	-28.99	49.37
18900 (1880.0)	3,760.00	-58.05	12.29	-61.65	1.93	V	-51.29	71.67
	5,640.00	-51.05	13.12	-50.12	2.57	V	-39.57	59.95
	7,520.00	-46.74	11.09	-37.90	3.03	H	-29.84	50.22
19150 (1905.0)	3,810.00	-58.28	12.29	-61.73	2.03	V	-51.47	71.85
	5,715.00	-48.98	13.10	-47.64	2.54	V	-37.08	57.46
	7,620.00	-49.05	11.33	-39.71	3.08	H	-31.46	51.84

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.5 RADIATED SPURIOUS EMISSIONS (15 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1857.50 MHz

▣ MEASURED OUTPUT POWER: 20.21 dBm = 0.105 W

▣ MODULATION SIGNAL: 15 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.21 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18675 (1857.5)	3,715.00	-56.45	12.31	-60.14	2.03	H	-49.86	70.07
	5,572.50	-56.19	13.06	-54.97	2.50	V	-44.41	64.62
	7,430.00	-46.88	11.04	-37.72	2.92	H	-29.60	49.81
18900 (1880.0)	3,760.00	-58.40	12.29	-62.00	1.93	H	-51.64	71.85
	5,640.00	-50.85	13.12	-49.92	2.57	V	-39.37	59.58
	7,520.00	-46.72	11.09	-37.88	3.03	H	-29.82	50.03
19125 (1902.5)	3,805.00	-58.39	12.30	-61.76	2.04	V	-51.50	71.71
	5,707.50	-49.89	13.12	-48.48	2.51	V	-37.87	58.08
	7,610.00	-48.50	11.31	-39.37	3.09	H	-31.15	51.36

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.6 RADIATED SPURIOUS EMISSIONS (20 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1860.00 MHz

▣ MEASURED OUTPUT POWER: 20.14 dBm = 0.103 W

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.14 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18700 (1860.0)	3,720.00	-54.11	12.31	-57.90	2.07	H	-47.66	67.80
	5,580.00	-55.17	13.07	-53.89	2.51	V	-43.33	63.47
	7,440.00	-46.11	11.04	-36.80	2.92	H	-28.68	48.82
18900 (1880.0)	3,760.00	-56.08	12.29	-59.68	1.93	V	-49.32	69.46
	5,640.00	-50.47	13.12	-49.54	2.57	H	-38.99	59.13
	7,520.00	-47.17	11.09	-38.33	3.03	H	-30.27	50.41
19100 (1900.0)	3,800.00	-56.24	12.30	-59.53	2.04	H	-49.27	69.41
	5,700.00	-51.15	13.13	-49.97	2.52	H	-39.36	59.50
	7,600.00	-48.48	11.29	-39.24	3.05	H	-31.00	51.14

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.7 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 824.70 MHz

▣ MEASURED OUTPUT POWER: 15.97 dBm = 0.040 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.97 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20407 (824.7)	1,649.40	-54.76	9.71	-62.80	1.29	V	-54.38	70.35
	2,474.10	-54.93	10.54	-60.05	1.60	H	-51.11	67.08
	3,298.80	-58.59	12.23	-63.67	1.85	H	-53.29	69.26
20525 (836.5)	1,673.00	-53.11	9.78	-61.28	1.28	V	-52.78	68.75
	2,509.50	-53.94	10.65	-58.94	1.61	H	-49.90	65.87
	3,346.00	-59.52	12.41	-65.00	1.86	V	-54.45	70.42
20643 (848.3)	1,696.60	-53.09	9.84	-61.31	1.30	V	-52.77	68.74
	2,544.90	-55.84	10.72	-60.73	1.63	H	-51.64	67.61
	3,393.20	-58.81	12.40	-64.10	1.87	H	-53.57	69.54

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.8 RADIATED SPURIOUS EMISSIONS (3 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 825.50 MHz

▣ MEASURED OUTPUT POWER: 15.83 dBm = 0.038 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.83 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20415 (825.5)	1,651.00	-53.17	9.71	-61.21	1.29	V	-52.79	68.62
	2,476.50	-54.78	10.54	-59.85	1.61	H	-50.92	66.75
	3,302.00	-58.60	12.25	-63.73	1.85	H	-53.33	69.16
20525 (836.5)	1,673.00	-53.61	9.78	-61.78	1.28	H	-53.28	69.11
	2,509.50	-53.95	10.65	-58.95	1.61	H	-49.91	65.74
	3,346.00	-57.59	12.41	-63.07	1.86	H	-52.52	68.35
20635 (847.5)	1,695.00	-54.43	9.84	-62.67	1.30	H	-54.13	69.96
	2,542.50	-52.10	10.72	-56.96	1.63	H	-47.87	63.70
	3,390.00	-57.34	12.40	-62.57	1.84	H	-52.01	67.84

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10^{th} harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.9 RADIATED SPURIOUS EMISSIONS (5 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 826.50 MHz

▣ MEASURED OUTPUT POWER: 15.92 dBm = 0.039 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.92 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20425 (826.5)	1,653.00	-53.59	9.72	-61.64	1.29	H	-53.21	69.13
	2,479.50	-58.56	10.54	-63.58	1.61	V	-54.65	70.57
	3,306.00	-57.24	12.26	-62.43	1.86	V	-52.03	67.95
20525 (836.5)	1,673.00	-53.80	9.78	-61.97	1.28	V	-53.47	69.39
	2,509.50	-58.83	10.65	-63.83	1.61	V	-54.79	70.71
	3,346.00	-57.49	12.41	-62.97	1.86	V	-52.42	68.34
20625 (846.5)	1,693.00	-54.80	9.83	-63.05	1.30	V	-54.52	70.44
	2,539.50	-56.95	10.71	-61.77	1.63	V	-52.69	68.61
	3,386.00	-57.01	12.40	-62.40	1.84	V	-51.84	67.76

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.9.10 RADIATED SPURIOUS EMISSIONS (10 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 836.50 MHz

▣ MEASURED OUTPUT POWER: 16.13 dBm = 0.041 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 29.13 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20450 (829.0)	1,658.00	-53.49	9.73	-61.56	1.28	H	-53.11	69.24
	2,487.00	-57.97	10.54	-62.95	1.62	V	-54.03	70.16
	3,316.00	-58.34	12.30	-63.65	1.89	V	-53.24	69.37
20525 (836.5)	1,673.00	-54.32	9.78	-62.49	1.28	V	-53.99	70.12
	2,509.50	-57.41	10.65	-62.41	1.61	H	-53.37	69.50
	3,346.00	-56.45	12.41	-61.93	1.86	H	-51.38	67.51
20600 (844.0)	1,688.00	-54.09	9.81	-62.33	1.30	V	-53.82	69.95
	2,532.00	-57.40	10.69	-62.17	1.62	H	-53.10	69.23
	3,376.00	-58.40	12.41	-63.93	1.85	H	-53.37	69.50

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10 RADIATED SPURIOUS EMISSIONS_Standalone with wireless charging cover

7.10.1 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1850.70 MHz

▣ MEASURED OUTPUT POWER: 20.36 dBm = 0.109 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.36 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18607 (1850.7)	3,701.40	-52.51	12.32	-56.17	2.02	H	-45.87	66.23
	5,552.10	-53.58	13.02	-52.46	2.52	H	-41.96	62.32
	7,402.80	-47.74	11.06	-38.37	2.91	H	-30.22	50.58
18900 (1880.0)	3,760.00	-56.78	12.29	-60.38	1.93	H	-50.02	70.38
	5,640.00	-52.82	13.12	-51.89	2.57	H	-41.34	61.70
	7,520.00	-47.78	11.09	-38.94	3.03	H	-30.88	51.24
19193 (1909.3)	3,818.60	-58.06	12.28	-61.09	2.04	H	-50.85	71.21
	5,727.90	-51.94	13.06	-50.75	2.55	H	-40.24	60.60
	7,637.20	-50.95	11.37	-41.51	3.13	H	-33.27	53.63

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.2 RADIATED SPURIOUS EMISSIONS (3 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1851.50 MHz

▣ MEASURED OUTPUT POWER: 20.25 dBm = 0.106 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.25 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18615 (1851.5)	3,703.00	-54.10	12.32	-57.74	2.02	H	-47.44	67.69
	5,554.50	-54.19	13.03	-53.08	2.52	H	-42.57	62.82
	7,406.00	-46.57	11.05	-37.13	2.92	H	-29.00	49.25
18900 (1880.0)	3,760.00	-58.53	12.29	-62.13	1.93	H	-51.77	72.02
	5,640.00	-50.68	13.12	-49.75	2.57	H	-39.20	59.45
	7,520.00	-49.16	11.09	-40.32	3.03	H	-32.26	52.51
19185 (1908.5)	3,817.00	-57.27	12.28	-60.38	2.04	H	-50.14	70.39
	5,725.50	-49.60	13.07	-48.41	2.56	H	-37.90	58.15
	7,634.00	-50.17	11.37	-40.72	3.16	H	-32.51	52.76

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.3 RADIATED SPURIOUS EMISSIONS (5 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1852.50 MHz

▣ MEASURED OUTPUT POWER: 20.38 dBm = 0.109 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.38 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18625 (1852.5)	3,705.00	-55.49	12.32	-59.12	2.01	H	-48.81	69.19
	5,557.50	-57.10	13.04	-55.98	2.53	H	-45.47	65.85
	7,410.00	-47.65	11.05	-38.15	2.92	H	-30.02	50.40
18900 (1880.0)	3,760.00	-56.16	12.29	-59.76	1.93	H	-49.40	69.78
	5,640.00	-52.23	13.12	-51.30	2.57	H	-40.75	61.13
	7,520.00	-47.90	11.09	-39.06	3.03	H	-31.00	51.38
19175 (1907.5)	3,815.00	-59.11	12.29	-62.32	2.04	H	-52.07	72.45
	5,722.50	-52.05	13.08	-50.86	2.57	H	-40.35	60.73
	7,630.00	-50.42	11.36	-40.96	3.19	H	-32.79	53.17

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.4 RADIATED SPURIOUS EMISSIONS (10 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1855.00 MHz

▣ MEASURED OUTPUT POWER: 20.33 dBm = 0.108 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.33 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18650 (1855.0)	3,710.00	-53.98	12.31	-57.56	1.99	H	-47.24	67.57
	5,565.00	-56.48	13.05	-55.32	2.51	H	-44.78	65.11
	7,420.00	-47.48	11.05	-38.00	2.93	H	-29.88	50.21
18900 (1880.0)	3,760.00	-57.06	12.29	-60.66	1.93	H	-50.30	70.63
	5,640.00	-52.87	13.12	-51.94	2.57	H	-41.39	61.72
	7,520.00	-48.26	11.09	-39.42	3.03	H	-31.36	51.69
19150 (1905.0)	3,810.00	-56.11	12.29	-59.56	2.03	H	-49.30	69.63
	5,715.00	-50.51	13.10	-49.17	2.54	H	-38.61	58.94
	7,620.00	-49.86	11.33	-40.52	3.08	H	-32.27	52.60

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.5 RADIATED SPURIOUS EMISSIONS (15 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1857.50 MHz

▣ MEASURED OUTPUT POWER: 20.34 dBm = 0.108 W

▣ MODULATION SIGNAL: 15 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.34 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18675 (1857.5)	3,715.00	-54.24	12.31	-57.93	2.03	H	-47.65	67.99
	5,572.50	-57.16	13.06	-55.94	2.50	H	-45.38	65.72
	7,430.00	-48.87	11.04	-39.71	2.92	H	-31.59	51.93
18900 (1880.0)	3,760.00	-58.63	12.29	-62.23	1.93	H	-51.87	72.21
	5,640.00	-50.83	13.12	-49.90	2.57	H	-39.35	59.69
	7,520.00	-48.09	11.09	-39.25	3.03	H	-31.19	51.53
19125 (1902.5)	3,805.00	-55.88	12.30	-59.25	2.04	H	-48.99	69.33
	5,707.50	-50.73	13.12	-49.32	2.51	H	-38.71	59.05
	7,610.00	-49.82	11.31	-40.69	3.09	H	-32.47	52.81

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.6 RADIATED SPURIOUS EMISSIONS (20 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 20.35 dBm = 0.108 W

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.35 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18700 (1860.0)	3,720.00	-52.40	12.31	-56.19	2.07	H	-45.95	66.30
	5,580.00	-56.19	13.07	-54.91	2.51	H	-44.35	64.70
	7,440.00	-47.86	11.04	-38.55	2.92	H	-30.43	50.78
18900 (1880.0)	3,760.00	-56.17	12.29	-59.77	1.93	H	-49.41	69.76
	5,640.00	-50.20	13.12	-49.27	2.57	H	-38.72	59.07
	7,520.00	-47.11	11.09	-38.27	3.03	H	-30.21	50.56
19100 (1900.0)	3,800.00	-55.65	12.30	-58.94	2.04	H	-48.68	69.03
	5,700.00	-55.00	13.13	-53.82	2.52	H	-43.21	63.56
	7,600.00	-49.95	11.29	-40.71	3.05	H	-32.47	52.82

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.7 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 824.70 MHz

▣ MEASURED OUTPUT POWER: 15.98 dBm = 0.040 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.98 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20407 (824.7)	1,649.40	-54.49	9.71	-62.53	1.29	H	-54.11	70.09
	2,474.10	-48.14	10.54	-53.26	1.60	H	-44.32	60.30
	3,298.80	-59.43	12.23	-64.51	1.85	V	-54.13	70.11
20525 (836.5)	1,673.00	-53.53	9.78	-61.70	1.28	H	-53.20	69.18
	2,509.50	-46.92	10.65	-51.92	1.61	H	-42.88	58.86
	3,346.00	-58.52	12.41	-64.00	1.86	V	-53.45	69.43
20643 (848.3)	1,696.60	-53.73	9.84	-61.95	1.30	H	-53.41	69.39
	2,544.90	-48.10	10.72	-52.99	1.63	H	-43.90	59.88
	3,393.20	-58.49	12.40	-63.78	1.87	V	-53.25	69.23

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.8 RADIATED SPURIOUS EMISSIONS (3 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 825.50 MHz

▣ MEASURED OUTPUT POWER: 15.81 dBm = 0.038 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.81 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20415 (825.5)	1,651.00	-54.34	9.71	-62.38	1.29	H	-53.96	69.77
	2,476.50	-48.94	10.54	-54.01	1.61	H	-45.08	60.89
	3,302.00	-58.04	12.25	-63.17	1.85	V	-52.77	68.58
20525 (836.5)	1,673.00	-56.54	9.78	-64.71	1.28	H	-56.21	72.02
	2,509.50	-47.84	10.65	-52.84	1.61	H	-43.80	59.61
	3,346.00	-58.04	12.41	-63.52	1.86	V	-52.97	68.78
20635 (847.5)	1,695.00	-54.21	9.84	-62.45	1.30	H	-53.91	69.72
	2,542.50	-47.56	10.72	-52.42	1.63	H	-43.33	59.14
	3,390.00	-57.28	12.40	-62.51	1.84	V	-51.95	67.76

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.9 RADIATED SPURIOUS EMISSIONS (5 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 826.50 MHz

▣ MEASURED OUTPUT POWER: 15.88 dBm = 0.039 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.88 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20425 (826.5)	1,653.00	-54.42	9.72	-62.47	1.29	H	-54.04	69.92
	2,479.50	-47.56	10.54	-52.58	1.61	H	-43.65	59.53
	3,306.00	-58.57	12.26	-63.76	1.86	H	-53.36	69.24
20525 (836.5)	1,673.00	-56.12	9.78	-64.29	1.28	H	-55.79	71.67
	2,509.50	-45.41	10.65	-50.41	1.61	H	-41.37	57.25
	3,346.00	-57.62	12.41	-63.10	1.86	V	-52.55	68.43
20625 (846.5)	1,693.00	-53.53	9.83	-61.78	1.30	H	-53.25	69.13
	2,539.50	-45.12	10.71	-49.94	1.63	H	-40.86	56.74
	3,386.00	-59.06	12.40	-64.45	1.84	H	-53.89	69.77

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.10.10 RADIATED SPURIOUS EMISSIONS (10 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 829.00 MHz

▣ MEASURED OUTPUT POWER: 15.91 dBm = 0.039 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.91 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20450 (829.0)	1,658.00	-54.38	9.73	-62.45	1.28	H	-54.00	69.91
	2,487.00	-47.11	10.54	-52.09	1.62	H	-43.17	59.08
	3,316.00	-56.76	12.30	-62.07	1.89	H	-51.66	67.57
20525 (836.5)	1,673.00	-52.04	9.78	-60.21	1.28	H	-51.71	67.62
	2,509.50	-43.84	10.65	-48.84	1.61	H	-39.80	55.71
	3,346.00	-55.51	12.41	-60.99	1.86	V	-50.44	66.35
20600 (844.0)	1,688.00	-54.18	9.81	-62.42	1.30	H	-53.91	69.82
	2,532.00	-44.76	10.69	-49.53	1.62	H	-40.46	56.37
	3,376.00	-57.50	12.41	-63.03	1.85	V	-52.47	68.38

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11 RADIATED SPURIOUS EMISSIONS_With wireless charging pad(WCD-110)

7.11.1 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 17.30 dBm = 0.054 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 30.30 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18607 (1850.7)	3,701.40	-53.95	12.32	-57.61	2.02	V	-47.31	64.61
	5,552.10	-55.16	13.02	-54.04	2.52	H	-43.54	60.84
	7,402.80	-47.67	11.06	-38.30	2.91	H	-30.15	47.45
18900 (1880.0)	3,760.00	-56.71	12.29	-60.31	1.93	V	-49.95	67.25
	5,640.00	-54.02	13.12	-53.09	2.57	H	-42.54	59.84
	7,520.00	-47.87	11.09	-39.03	3.03	H	-30.97	48.27
19193 (1909.3)	3,818.60	-56.15	12.28	-59.18	2.04	V	-48.94	66.24
	5,727.90	-52.23	13.06	-51.04	2.55	H	-40.53	57.83
	7,637.20	-51.38	11.37	-41.94	3.13	H	-33.70	51.00

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.2 RADIATED SPURIOUS EMISSIONS (3 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 17.19 dBm = 0.052 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 30.19 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18615 (1851.5)	3,703.00	-54.06	12.32	-57.70	2.02	H	-47.40	64.59
	5,554.50	-53.19	13.03	-52.08	2.52	H	-41.57	58.76
	7,406.00	-47.05	11.05	-37.61	2.92	H	-29.48	46.67
18900 (1880.0)	3,760.00	-56.31	12.29	-59.91	1.93	H	-49.55	66.74
	5,640.00	-52.96	13.12	-52.03	2.57	H	-41.48	58.67
	7,520.00	-47.59	11.09	-38.75	3.03	H	-30.69	47.88
19185 (1908.5)	3,817.00	-57.21	12.28	-60.32	2.04	H	-50.08	67.27
	5,725.50	-50.80	13.07	-49.61	2.56	H	-39.10	56.29
	7,634.00	-50.31	11.37	-40.86	3.16	H	-32.65	49.84

NOTES: 1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:

2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case

5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.3 RADIATED SPURIOUS EMISSIONS (5 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 17.32 dBm = 0.054 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 30.32 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18625 (1852.5)	3,705.00	-53.88	12.32	-57.51	2.01	V	-47.20	64.52
	5,557.50	-56.16	13.04	-55.04	2.53	H	-44.53	61.85
	7,410.00	-47.49	11.05	-37.99	2.92	H	-29.86	47.18
18900 (1880.0)	3,760.00	-58.94	12.29	-62.54	1.93	H	-52.18	69.50
	5,640.00	-53.81	13.12	-52.88	2.57	H	-42.33	59.65
	7,520.00	-48.50	11.09	-39.66	3.03	H	-31.60	48.92
19175 (1907.5)	3,815.00	-56.42	12.29	-59.63	2.04	H	-49.38	66.70
	5,722.50	-50.48	13.08	-49.29	2.57	H	-38.78	56.10
	7,630.00	-50.50	11.36	-41.04	3.19	H	-32.87	50.19

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.4 RADIATED SPURIOUS EMISSIONS (10 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 17.56 dBm = 0.057 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 30.56 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18650 (1855.0)	3,710.00	-54.13	12.31	-57.71	1.99	H	-47.39	64.95
	5,565.00	-55.57	13.05	-54.41	2.51	H	-43.87	61.43
	7,420.00	-46.93	11.05	-37.45	2.93	H	-29.33	46.89
18900 (1880.0)	3,760.00	-58.50	12.29	-62.10	1.93	H	-51.74	69.30
	5,640.00	-52.93	13.12	-52.00	2.57	H	-41.45	59.01
	7,520.00	-47.36	11.09	-38.52	3.03	H	-30.46	48.02
19150 (1905.0)	3,810.00	-56.87	12.29	-60.32	2.03	H	-50.06	67.62
	5,715.00	-51.37	13.10	-50.03	2.54	H	-39.47	57.03
	7,620.00	-49.70	11.33	-40.36	3.08	H	-32.11	49.67

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.5 RADIATED SPURIOUS EMISSIONS (15 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 17.29 dBm = 0.054 W

▣ MODULATION SIGNAL: 15 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 30.29 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18675 (1857.5)	3,715.00	-53.79	12.31	-57.48	2.03	V	-47.20	64.49
	5,572.50	-54.40	13.06	-53.18	2.50	H	-42.62	59.91
	7,430.00	-47.22	11.04	-38.06	2.92	H	-29.94	47.23
18900 (1880.0)	3,760.00	-58.41	12.29	-62.01	1.93	H	-51.65	68.94
	5,640.00	-54.26	13.12	-53.33	2.57	V	-42.78	60.07
	7,520.00	-47.64	11.09	-38.80	3.03	H	-30.74	48.03
19125 (1902.5)	3,805.00	-56.68	12.30	-60.05	2.04	V	-49.79	67.08
	5,707.50	-52.21	13.12	-50.80	2.51	H	-40.19	57.48
	7,610.00	-48.86	11.31	-39.73	3.09	H	-31.51	48.80

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.6 RADIATED SPURIOUS EMISSIONS (20 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 17.42 dBm = 0.055 W

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 30.42 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18700 (1860.0)	3,720.00	-53.21	12.31	-57.00	2.07	V	-46.76	64.18
	5,580.00	-54.76	13.07	-53.48	2.51	H	-42.92	60.34
	7,440.00	-46.88	11.04	-37.57	2.92	H	-29.45	46.87
18900 (1880.0)	3,760.00	-58.08	12.29	-61.68	1.93	V	-51.32	68.74
	5,640.00	-51.49	13.12	-50.56	2.57	H	-40.01	57.43
	7,520.00	-47.68	11.09	-38.84	3.03	H	-30.78	48.20
19100 (1900.0)	3,800.00	-55.98	12.30	-59.27	2.04	H	-49.01	66.43
	5,700.00	-51.62	13.13	-50.44	2.52	H	-39.83	57.25
	7,600.00	-48.71	11.29	-39.47	3.05	H	-31.23	48.65

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.7 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 824.70 MHz

▣ MEASURED OUTPUT POWER: 15.24 dBm = 0.033 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.24 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20407 (824.7)	1,649.40	-56.91	9.71	-64.95	1.29	V	-56.53	71.77
	2,474.10	-50.42	10.54	-55.54	1.60	H	-46.60	61.84
	3,298.80	-57.09	12.23	-62.17	1.85	V	-51.79	67.03
20525 (836.5)	1,673.00	-52.27	9.78	-60.44	1.28	H	-51.94	67.18
	2,509.50	-49.32	10.65	-54.32	1.61	H	-45.28	60.52
	3,346.00	-59.15	12.41	-64.63	1.86	H	-54.08	69.32
20643 (848.3)	1,696.60	-53.71	9.84	-61.93	1.30	H	-53.39	68.63
	2,544.90	-54.54	10.72	-59.43	1.63	H	-50.34	65.58
	3,393.20	-57.83	12.40	-63.12	1.87	V	-52.59	67.83

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.8 RADIATED SPURIOUS EMISSIONS (3 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 825.50 MHz

▣ MEASURED OUTPUT POWER: 15.26 dBm = 0.034 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.26 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20415 (825.5)	1,651.00	-57.17	9.71	-65.21	1.29	V	-56.79	72.05
	2,476.50	-51.65	10.54	-56.72	1.61	H	-47.79	63.05
	3,302.00	-57.80	12.25	-62.93	1.85	H	-52.53	67.79
20525 (836.5)	1,673.00	-51.57	9.78	-59.74	1.28	H	-51.24	66.50
	2,509.50	-50.92	10.65	-55.92	1.61	H	-46.88	62.14
	3,346.00	-59.49	12.41	-64.97	1.86	V	-54.42	69.68
20635 (847.5)	1,695.00	-49.46	9.84	-57.70	1.30	V	-49.16	64.42
	2,542.50	-50.40	10.72	-55.26	1.63	V	-46.17	61.43
	3,390.00	-58.87	12.40	-64.10	1.84	V	-53.54	68.80

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.9 RADIATED SPURIOUS EMISSIONS (5 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 826.50 MHz

▣ MEASURED OUTPUT POWER: 15.23 dBm = 0.033 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.23 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20425 (826.5)	1,653.00	-54.35	9.72	-62.40	1.29	V	-53.97	69.20
	2,479.50	-50.05	10.54	-55.07	1.61	H	-46.14	61.37
	3,306.00	-57.53	12.26	-62.72	1.86	H	-52.32	67.55
20525 (836.5)	1,673.00	-51.23	9.78	-59.40	1.28	H	-50.90	66.13
	2,509.50	-51.00	10.65	-56.00	1.61	H	-46.96	62.19
	3,346.00	-58.85	12.41	-64.33	1.86	V	-53.78	69.01
20625 (846.5)	1,693.00	-52.63	9.83	-60.88	1.30	H	-52.35	67.58
	2,539.50	-52.38	10.71	-57.20	1.63	H	-48.12	63.35
	3,386.00	-56.62	12.40	-62.01	1.84	H	-51.45	66.68

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.11.10 RADIATED SPURIOUS EMISSIONS (10 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 829.00 MHz

▣ MEASURED OUTPUT POWER: 15.35 dBm = 0.034 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.35 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20450 (829.0)	1,658.00	-55.59	9.73	-63.66	1.28	V	-55.21	70.56
	2,487.00	-51.35	10.54	-56.33	1.62	H	-47.41	62.76
	3,316.00	-58.12	12.30	-63.43	1.89	V	-53.02	68.37
20525 (836.5)	1,673.00	-49.34	9.78	-57.51	1.28	H	-49.01	64.36
	2,509.50	-52.60	10.65	-57.60	1.61	H	-48.56	63.91
	3,346.00	-57.70	12.41	-63.18	1.86	H	-52.63	67.98
20600 (844.0)	1,688.00	-54.04	9.81	-62.28	1.30	V	-53.77	69.12
	2,532.00	-51.30	10.69	-56.07	1.62	H	-47.00	62.35
	3,376.00	-58.34	12.41	-63.87	1.85	V	-53.31	68.66

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12 RADIATED SPURIOUS EMISSIONS_With wireless charging pad(CT 06801)

7.12.1 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1909.30 MHz

▣ MEASURED OUTPUT POWER: 19.91 dBm = 0.098 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 32.91 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18607 (1850.7)	3,701.40	-55.66	12.32	-59.32	2.02	H	-49.02	68.93
	5,552.10	-56.26	13.02	-55.14	2.52	H	-44.64	64.55
	7,402.80	-49.45	11.06	-40.08	2.91	V	-31.93	51.84
18900 (1880.0)	3,760.00	-57.08	12.29	-60.68	1.93	H	-50.32	70.23
	5,640.00	-53.97	13.12	-53.04	2.57	H	-42.49	62.40
	7,520.00	-54.79	11.09	-45.95	3.03	H	-37.89	57.80
19193 (1909.3)	3,818.60	-57.96	12.28	-60.99	2.04	V	-50.75	70.66
	5,727.90	-52.48	13.06	-51.29	2.55	H	-40.78	60.69
	7,637.20	-51.25	11.37	-41.81	3.13	V	-33.57	53.48

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.2 RADIATED SPURIOUS EMISSIONS (3 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1908.50 MHz

▣ MEASURED OUTPUT POWER: 19.75 dBm = 0.094 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 32.75 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18615 (1851.5)	3,703.00	-55.14	12.32	-58.78	2.02	H	-48.48	68.23
	5,554.50	-56.88	13.03	-55.77	2.52	H	-45.26	65.01
	7,406.00	-49.95	11.05	-40.51	2.92	V	-32.38	52.13
18900 (1880.0)	3,760.00	-57.82	12.29	-61.42	1.93	H	-51.06	70.81
	5,640.00	-54.48	13.12	-53.55	2.57	V	-43.00	62.75
	7,520.00	-49.31	11.09	-40.47	3.03	V	-32.41	52.16
19185 (1908.5)	3,817.00	-58.65	12.28	-61.76	2.04	H	-51.52	71.27
	5,725.50	-52.41	13.07	-51.22	2.56	H	-40.71	60.46
	7,634.00	-50.90	11.37	-41.45	3.16	V	-33.24	52.99

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10^{th} harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.3 RADIATED SPURIOUS EMISSIONS (5 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1907.50 MHz

▣ MEASURED OUTPUT POWER: 19.93 dBm = 0.098 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 32.93 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18625 (1852.5)	3,705.00	-54.78	12.32	-58.41	2.01	H	-48.10	68.03
	5,557.50	-56.51	13.04	-55.39	2.53	V	-44.88	64.81
	7,410.00	-49.59	11.05	-40.09	2.92	V	-31.96	51.89
18900 (1880.0)	3,760.00	-56.28	12.29	-59.88	1.93	H	-49.52	69.45
	5,640.00	-53.57	13.12	-52.64	2.57	H	-42.09	62.02
	7,520.00	-49.62	11.09	-40.78	3.03	V	-32.72	52.65
19175 (1907.5)	3,815.00	-57.22	12.29	-60.43	2.04	H	-50.18	70.11
	5,722.50	-53.63	13.08	-52.44	2.57	V	-41.93	61.86
	7,630.00	-52.24	11.36	-42.78	3.19	V	-34.61	54.54

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.4 RADIATED SPURIOUS EMISSIONS (10 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 20.02 dBm = 0.100 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 33.02 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18650 (1855.0)	3,710.00	-52.75	12.31	-56.33	1.99	H	-46.01	66.03
	5,565.00	-56.29	13.05	-55.13	2.51	V	-44.59	64.61
	7,420.00	-50.27	11.05	-40.79	2.93	V	-32.67	52.69
18900 (1880.0)	3,760.00	-58.25	12.29	-61.85	1.93	H	-51.49	71.51
	5,640.00	-52.00	13.12	-51.07	2.57	H	-40.52	60.54
	7,520.00	-49.26	11.09	-40.42	3.03	V	-32.36	52.38
19150 (1905.0)	3,810.00	-57.54	12.29	-60.99	2.03	V	-50.73	70.75
	5,715.00	-52.45	13.10	-51.11	2.54	V	-40.55	60.57
	7,620.00	-51.87	11.33	-42.53	3.08	V	-34.28	54.30

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.5 RADIATED SPURIOUS EMISSIONS (15 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1880.00 MHz

▣ MEASURED OUTPUT POWER: 19.59 dBm = 0.091 W

▣ MODULATION SIGNAL: 15 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 32.59 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18675 (1857.5)	3,715.00	-53.42	12.31	-57.11	2.03	H	-46.83	66.42
	5,572.50	-56.49	13.06	-55.27	2.50	H	-44.71	64.30
	7,430.00	-50.62	11.04	-41.46	2.92	V	-33.34	52.93
18900 (1880.0)	3,760.00	-56.43	12.29	-60.03	1.93	H	-49.67	69.26
	5,640.00	-53.42	13.12	-52.49	2.57	V	-41.94	61.53
	7,520.00	-50.90	11.09	-42.06	3.03	V	-34.00	53.59
19125 (1902.5)	3,805.00	-58.80	12.30	-62.17	2.04	V	-51.91	71.50
	5,707.50	-50.73	13.12	-49.32	2.51	H	-38.71	58.30
	7,610.00	-51.20	11.31	-42.07	3.09	H	-33.85	53.44

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.6 RADIATED SPURIOUS EMISSIONS (20 MHz Band 2 LTE)

▣ OPERATING FREQUENTY: 1900.00 MHz

▣ MEASURED OUTPUT POWER: 19.72 dBm = 0.094 W

▣ MODULATION SIGNAL: 20 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 32.72 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitude Level (dBm)	C.L	Pol	EIRP (dBm)	dBc
18700 (1860.0)	3,720.00	-54.19	12.31	-57.98	2.07	H	-47.74	67.46
	5,580.00	-58.71	13.07	-57.43	2.51	H	-46.87	66.59
	7,440.00	-50.74	11.04	-41.43	2.92	V	-33.31	53.03
18900 (1880.0)	3,760.00	-56.61	12.29	-60.21	1.93	V	-49.85	69.57
	5,640.00	-53.86	13.12	-52.93	2.57	H	-42.38	62.10
	7,520.00	-50.44	11.09	-41.60	3.03	V	-33.54	53.26
19100 (1900.0)	3,800.00	-58.18	12.30	-61.47	2.04	H	-51.21	70.93
	5,700.00	-52.66	13.13	-51.48	2.52	V	-40.87	60.59
	7,600.00	-51.12	11.29	-41.88	3.05	V	-33.64	53.36

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010, June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and EIRP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.7 RADIATED SPURIOUS EMISSIONS (1.4 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 824.70 MHz

▣ MEASURED OUTPUT POWER: 16.17 dBm = 0.041 W

▣ MODULATION SIGNAL: 1.4 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 29.17 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20407 (824.7)	1,649.40	-54.57	9.71	-62.61	1.29	H	-54.19	70.36
	2,474.10	-56.27	10.54	-61.39	1.60	H	-52.45	68.62
	3,298.80	-59.25	12.23	-64.33	1.85	H	-53.95	70.12
20525 (836.5)	1,673.00	-53.03	9.78	-61.20	1.28	H	-52.70	68.87
	2,509.50	-58.68	10.65	-63.68	1.61	H	-54.64	70.81
	3,346.00	-56.90	12.41	-62.38	1.86	H	-51.83	68.00
20643 (848.3)	1,696.60	-54.50	9.84	-62.72	1.30	H	-54.18	70.35
	2,544.90	-59.22	10.72	-64.11	1.63	H	-55.02	71.19
	3,393.20	-58.52	12.40	-63.81	1.87	H	-53.28	69.45

NOTES:

1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.8 RADIATED SPURIOUS EMISSIONS (3 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 825.50 MHz

▣ MEASURED OUTPUT POWER: 15.99 dBm = 0.040 W

▣ MODULATION SIGNAL: 3 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 28.99 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20415 (825.5)	1,651.00	-53.32	9.71	-61.36	1.29	H	-52.94	68.93
	2,476.50	-56.93	10.54	-62.00	1.61	H	-53.07	69.06
	3,302.00	-59.26	12.25	-64.39	1.85	H	-53.99	69.98
20525 (836.5)	1,673.00	-54.00	9.78	-62.17	1.28	H	-53.67	69.66
	2,509.50	-55.53	10.65	-60.53	1.61	H	-51.49	67.48
	3,346.00	-55.77	12.41	-61.25	1.86	H	-50.70	66.69
20635 (847.5)	1,695.00	-53.54	9.84	-61.78	1.30	H	-53.24	69.23
	2,542.50	-56.51	10.72	-61.37	1.63	H	-52.28	68.27
	3,390.00	-57.50	12.40	-62.73	1.84	H	-52.17	68.16

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.9 RADIATED SPURIOUS EMISSIONS (5 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 826.50 MHz

▣ MEASURED OUTPUT POWER: 16.12 dBm = 0.041 W

▣ MODULATION SIGNAL: 5 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 29.12 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20425 (826.5)	1,653.00	-52.93	9.72	-60.98	1.29	H	-52.55	68.67
	2,479.50	-56.85	10.54	-61.87	1.61	H	-52.94	69.06
	3,306.00	-57.11	12.26	-62.30	1.86	H	-51.90	68.02
20525 (836.5)	1,673.00	-54.05	9.78	-62.22	1.28	H	-53.72	69.84
	2,509.50	-57.81	10.65	-62.81	1.61	H	-53.77	69.89
	3,346.00	-56.35	12.41	-61.83	1.86	H	-51.28	67.40
20625 (846.5)	1,693.00	-55.05	9.83	-63.30	1.30	H	-54.77	70.89
	2,539.50	-56.43	10.71	-61.25	1.63	H	-52.17	68.29
	3,386.00	-58.50	12.40	-63.89	1.84	H	-53.33	69.45

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.12.10 RADIATED SPURIOUS EMISSIONS (10 MHz Band 5 LTE)

▣ OPERATING FREQUENTY: 836.50 MHz

▣ MEASURED OUTPUT POWER: 16.23 dBm = 0.042 W

▣ MODULATION SIGNAL: 10 MHz QPSK

▣ DISTANCE: 3 meters

▣ LIMIT: 43 + 10 lo_{g10} (W) = 29.23 dBc

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBd)	Substitude Level (dBm)	C.L	Pol	ERP (dBm)	dBc
20450 (829.0)	1,658.00	-52.91	9.73	-60.98	1.28	H	-52.53	68.76
	2,487.00	-56.61	10.54	-61.59	1.62	H	-52.67	68.90
	3,316.00	-58.77	12.30	-64.08	1.89	H	-53.67	69.90
20525 (836.5)	1,673.00	-49.32	9.78	-57.49	1.28	H	-48.99	65.22
	2,509.50	-50.02	10.65	-55.02	1.61	H	-45.98	62.21
	3,346.00	-59.14	12.41	-64.62	1.86	H	-54.07	70.30
20600 (844.0)	1,688.00	-52.48	9.81	-60.72	1.30	H	-52.21	68.44
	2,532.00	-56.40	10.69	-61.17	1.62	H	-52.10	68.33
	3,376.00	-58.46	12.41	-63.99	1.85	H	-53.43	69.66

NOTES:
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-D-2010 June 24, 2010:
2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. All of RB size has been tested for emissions and ERP, with the 1RB configuration observed as the worst case
5. We are performed 16QAM and QPSK modulations. The worst case data are reported in the table above.

7.13 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Band 2	1.4 MHz	1880.0	QPSK	6	0	5.00
			16-QAM	6	0	5.78
	3 MHz		QPSK	15	0	5.08
			16-QAM	15	0	5.92
	5 MHz		QPSK	25	0	5.03
			16-QAM	25	0	5.83
	10 MHz		QPSK	50	0	5.05
			16-QAM	50	0	5.83
	15 MHz		QPSK	75	0	4.87
			16-QAM	75	0	5.72
	20 MHz		QPSK	100	0	4.92
			16-QAM	100	0	5.78

- Plots of the EUT's Peak- to- Average Ratio are shown Page 116 ~ 121

7.14 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Band 2	1.4 MHz	1880.0	QPSK	6	0	1.0918
			16-QAM	6	0	1.0937
	3 MHz		QPSK	15	0	2.6952
			16-QAM	15	0	2.6988
	5 MHz		QPSK	25	0	4.4975
			16-QAM	25	0	4.5011
	10 MHz		QPSK	50	0	9.0051
			16-QAM	50	0	8.9491
	15 MHz		QPSK	75	0	13.4600
			16-QAM	75	0	13.4560
	20 MHz		QPSK	100	0	17.9310
			16-QAM	100	0	17.9730

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Band 5	1.4 MHz	836.5	QPSK	6	0	1.0942
			16-QAM	6	0	1.0887
	3 MHz		QPSK	15	0	2.7074
			16-QAM	15	0	2.7003
	5 MHz		QPSK	25	0	4.5077
			16-QAM	25	0	4.5011
	10 MHz		QPSK	50	0	8.9824
			16-QAM	50	0	8.9582

- Plots of the EUT's Occupied Bandwidth are shown Page 106 ~ 115.

7.15 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Frequency of Maximum Harmonic (GHz)	Maximum Data [dBm]
Band 2	1.4	1850.7	QPSK	1	0	16.3210	-27.42
		1880.0				16.4690	-28.30
		1909.3				16.4855	-28.06
	3	1851.5				19.0185	-28.27
		1880.0				16.9970	-28.04
		1908.5				16.7405	-28.78
	5	1852.5				18.9795	-27.68
		1880.0				18.9370	-28.42
		1907.5				19.0160	-28.46
	10	1855.0				19.0570	-27.55
		1880.0				18.5600	-28.38
		1905.0				16.9770	-28.43
	15	1857.5				19.0575	-27.81
		1880.0				18.9165	-27.50
		1902.5				15.8610	-28.52
	20	1860.0				16.7315	-28.94
		1880.0				16.4830	-28.40
		1900.0				17.0015	-28.25

Band	Band Width (MHz)	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Frequency of Maximum Harmonic (GHz)	Maximum Data [dBm]
Band 5	1.4	824.7	QPSK	1	0	2.632292	-32.23
		836.5				6.758500	-32.02
		848.3				2.893714	-31.64
	3	825.5				2.731692	-31.64
		836.5				3.322625	-32.52
		847.5				2.590544	-30.87
	5	826.5				2.689447	-32.24
		836.5				3.078598	-31.42
		846.5				3.117861	-32.17
	10	829.0				5.815000	-32.50
		836.5				2.656148	-32.23
		844.0				3.114879	-32.52

- Plots of the EUT's Conducted Spurious Emissions are shown Page 152 ~ 181.

7.15.1 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 122 ~ 151.

7.16 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

7.16.1 FREQUENCY STABILITY (1.4 MHz Band 2 LTE)

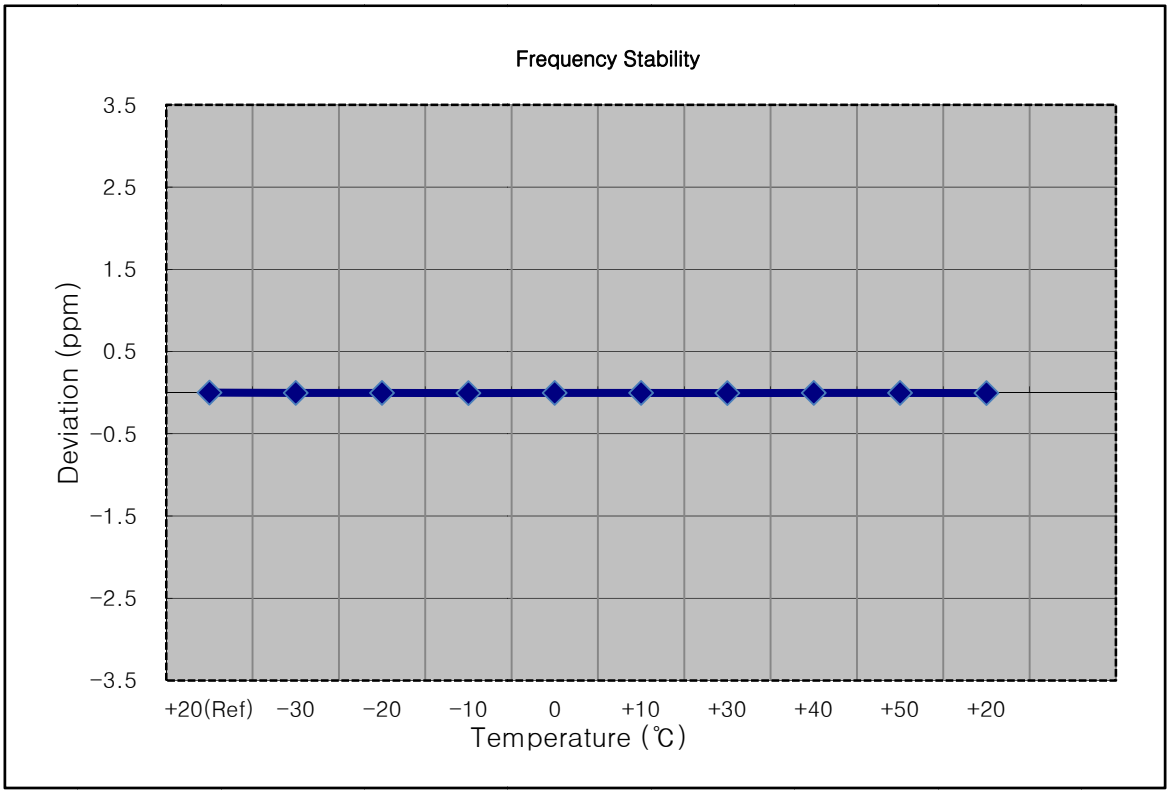
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (1.4 MHz)

▣ REFERENCE VOLTAGE: 3.85 VDC

▣ DEVIATION LIMIT: -

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.85	+20(Ref)	1879 999 993	0.0	0.000 000	0.000
100%		-30	1879 999 986	-7.2	0.000 000	-0.004
100%		-20	1879 999 985	-7.9	0.000 000	-0.004
100%		-10	1879 999 984	-8.7	0.000 000	-0.005
100%		0	1879 999 986	-6.8	0.000 000	-0.004
100%		+10	1879 999 987	-6.3	0.000 000	-0.003
100%		+30	1879 999 982	-11.2	-0.000 001	-0.006
100%		+40	1879 999 987	-6.1	0.000 000	-0.003
100%		+50	1879 999 986	-6.9	0.000 000	-0.004
Batt. Endpoint	3.27	+20	1879 999 984	-9.2	0.000 000	-0.005



7.16.2 FREQUENCY STABILITY (3 MHz Band 2 LTE)

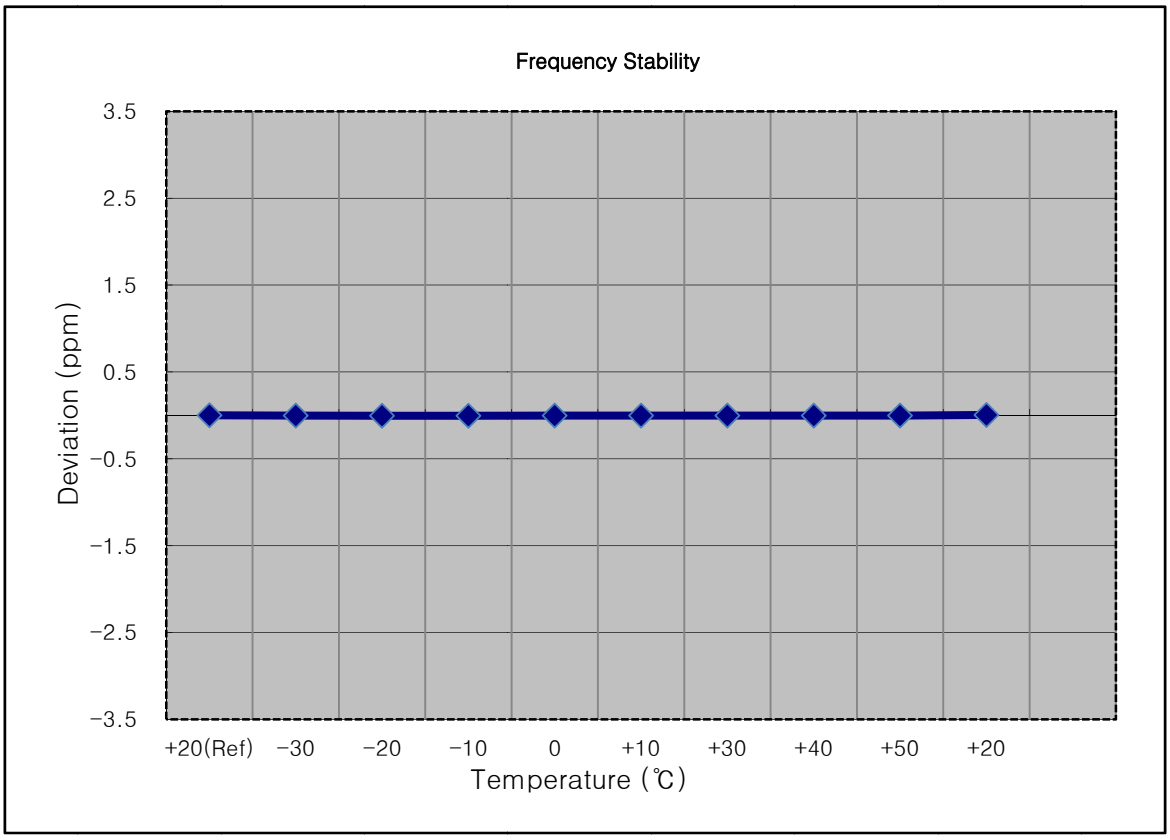
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (3 MHz)

▣ REFERENCE VOLTAGE: 3.85 VDC

▣ DEVIATION LIMIT: -

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.85	+20(Ref)	1879 999 995	0.0	0.000 000	0.000
100%		-30	1879 999 987	-7.9	0.000 000	-0.004
100%		-20	1879 999 986	-9.0	0.000 000	-0.005
100%		-10	1879 999 986	-8.1	0.000 000	-0.004
100%		0	1879 999 987	-7.1	0.000 000	-0.004
100%		+10	1879 999 989	-5.5	0.000 000	-0.003
100%		+30	1879 999 989	-6.0	0.000 000	-0.003
100%		+40	1879 999 987	-8.0	0.000 000	-0.004
100%		+50	1879 999 989	-5.9	0.000 000	-0.003
Batt. Endpoint	3.27	+20	1880 000 001	6.5	0.000 000	0.003



7.16.3 FREQUENCY STABILITY (5 MHz Band 2 LTE)

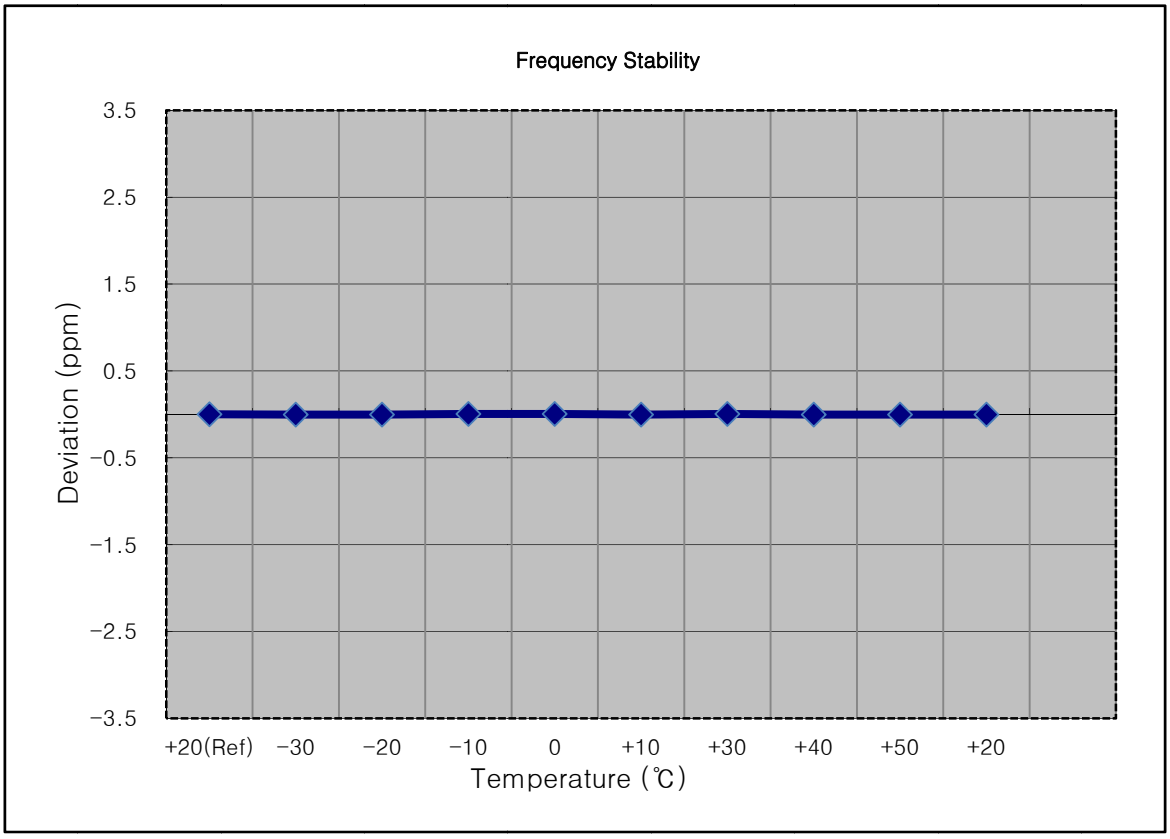
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (5 MHz)

▣ REFERENCE VOLTAGE: 3.85 VDC

▣ DEVIATION LIMIT: -

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.85	+20(Ref)	1879 999 995	0.0	0.000 000	0.000
100%		-30	1879 999 988	-7.0	0.000 000	-0.004
100%		-20	1879 999 990	-5.6	0.000 000	-0.003
100%		-10	1880 000 002	7.1	0.000 000	0.004
100%		0	1880 000 003	7.3	0.000 000	0.004
100%		+10	1879 999 990	-5.4	0.000 000	-0.003
100%		+30	1880 000 002	7.1	0.000 000	0.004
100%		+40	1879 999 989	-6.4	0.000 000	-0.003
100%		+50	1879 999 990	-5.1	0.000 000	-0.003
Batt. Endpoint	3.27	+20	1879 999 988	-6.9	0.000 000	-0.004



7.16.4 FREQUENCY STABILITY (10 MHz Band 2 LTE)

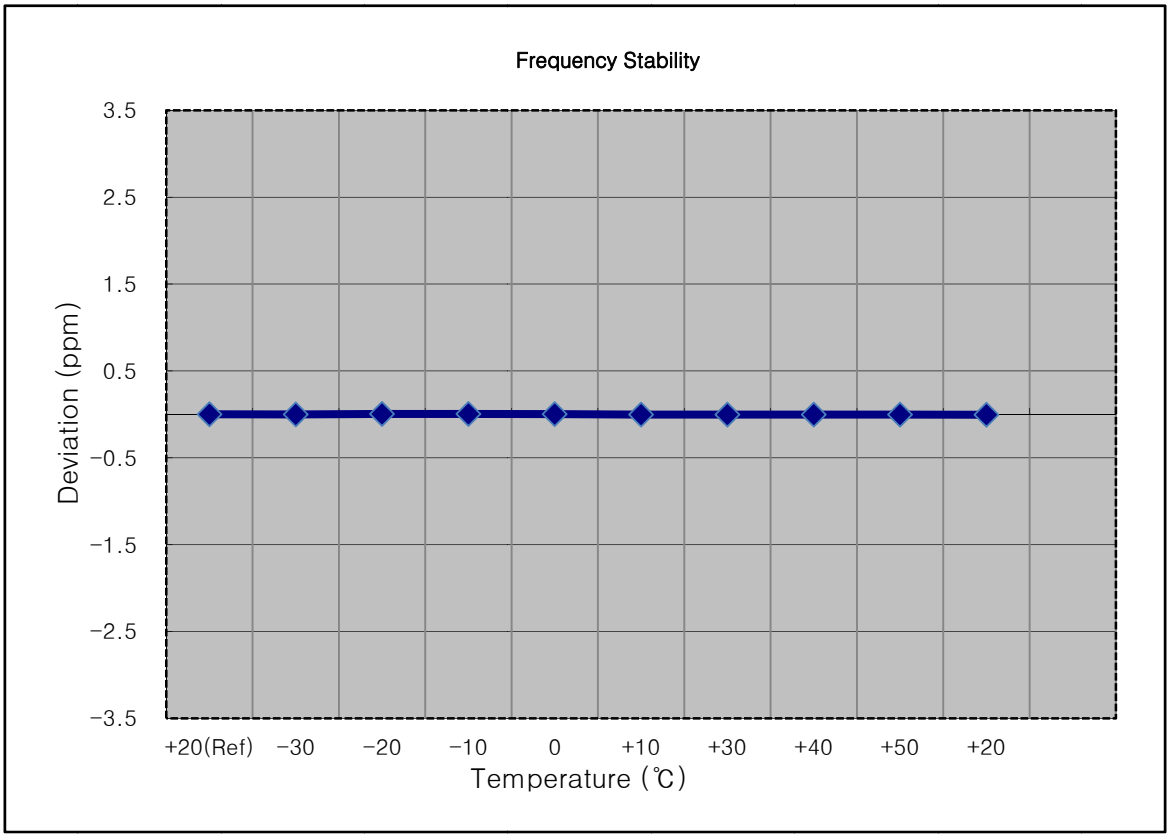
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (10 MHz)

▣ REFERENCE VOLTAGE: 3.85 VDC

▣ DEVIATION LIMIT: -

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.85	+20(Ref)	1879 999 994	0.0	0.000 000	0.000
100%		-30	1879 999 991	-3.2	0.000 000	-0.002
100%		-20	1880 000 000	6.0	0.000 000	0.003
100%		-10	1880 000 003	9.1	0.000 000	0.005
100%		0	1879 999 999	4.7	0.000 000	0.003
100%		+10	1879 999 987	-6.8	0.000 000	-0.004
100%		+30	1879 999 987	-7.1	0.000 000	-0.004
100%		+40	1879 999 989	-5.3	0.000 000	-0.003
100%		+50	1879 999 988	-5.6	0.000 000	-0.003
Batt. Endpoint	3.27	+20	1879 999 984	-10.0	-0.000 001	-0.005



7.16.5 FREQUENCY STABILITY (15 MHz Band 2 LTE)

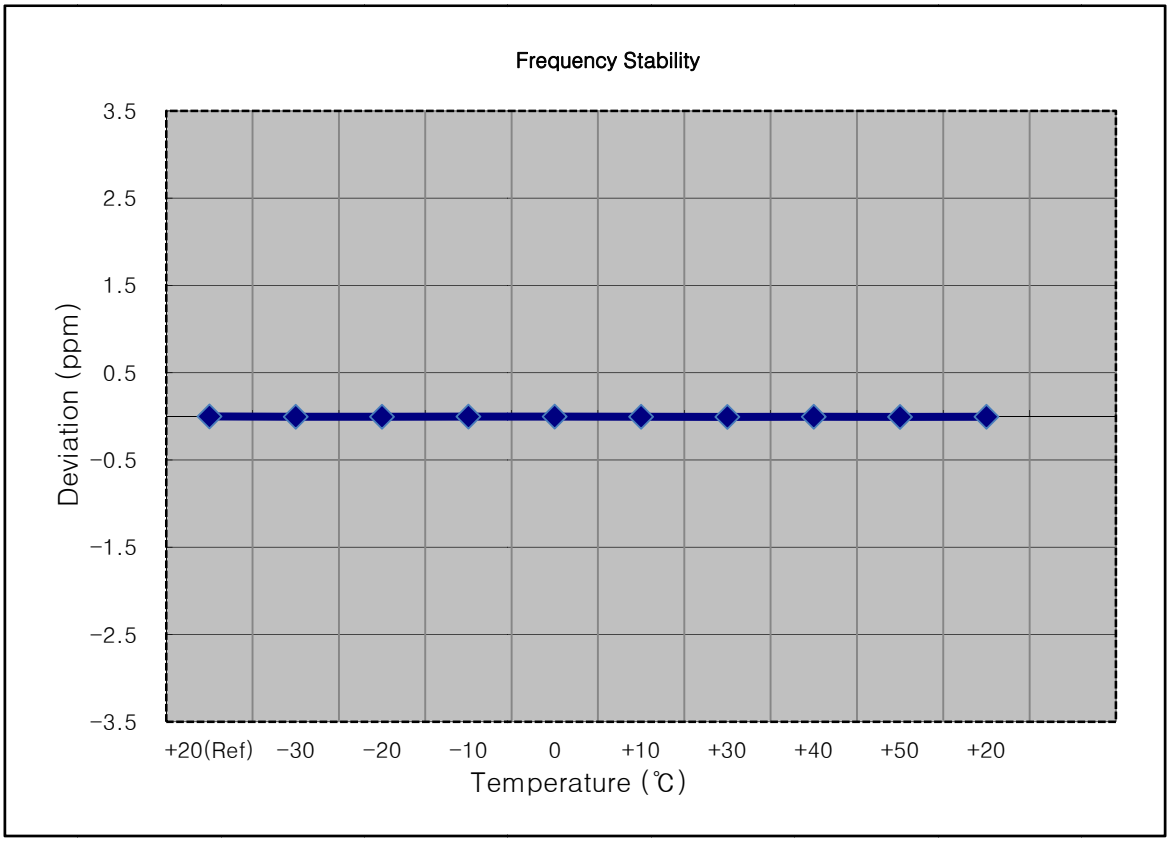
▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (15 MHz)

▣ REFERENCE VOLTAGE: 3.85 VDC

▣ DEVIATION LIMIT: -

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.85	+20(Ref)	1879 999 996	0.0	0.000 000	0.000
100%		-30	1879 999 989	-7.1	0.000 000	-0.004
100%		-20	1879 999 988	-8.2	0.000 000	-0.004
100%		-10	1879 999 990	-5.4	0.000 000	-0.003
100%		0	1879 999 992	-4.1	0.000 000	-0.002
100%		+10	1879 999 988	-7.4	0.000 000	-0.004
100%		+30	1879 999 982	-13.5	-0.000 001	-0.007
100%		+40	1879 999 987	-9.3	0.000 000	-0.005
100%		+50	1879 999 984	-11.5	-0.000 001	-0.006
Batt. Endpoint	3.27	+20	1879 999 986	-10.1	-0.000 001	-0.005



7.16.6 FREQUENCY STABILITY (20 MHz Band 2 LTE)

▣ OPERATING FREQUENCY: 1880,000,000 Hz

▣ CHANNEL: 18900 (20 MHz)

▣ REFERENCE VOLTAGE: 3.85 VDC

▣ DEVIATION LIMIT: -

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.85	+20(Ref)	1879 999 993	0.0	0.000 000	0.000
100%		-30	1879 999 989	-3.8	0.000 000	-0.002
100%		-20	1879 999 985	-8.0	0.000 000	-0.004
100%		-10	1879 999 986	-6.5	0.000 000	-0.003
100%		0	1879 999 988	-4.5	0.000 000	-0.002
100%		+10	1879 999 986	-6.5	0.000 000	-0.003
100%		+30	1879 999 986	-6.4	0.000 000	-0.003
100%		+40	1879 999 985	-7.3	0.000 000	-0.004
100%		+50	1880 000 001	8.7	0.000 000	0.005
Batt. Endpoint	3.27	+20	1879 999 985	-7.1	0.000 000	-0.004