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Report No.: FG8O1751C



FCC RADIO TEST REPORT

FCC ID : XIA-IFWA40

Equipment: Wireless Home Internet

Brand Name : Netcomm Model Name : IFWA-40

Applicant : NetComm Wireless Limited

18-20 Orion Road Lane Cove NSW 2066 Australia

Manufacturer : NetComm Wireless Limited

18-20 Orion Road Lane Cove NSW 2066 Australia

Standard : FCC 47 CFR Part 2, Part 27(D)

The product was received on Oct. 17, 2018 and testing was started from Dec. 10, 2018 and completed on Mar. 18, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Jones Tsai

TEL: 886-3-327-3456

Ince/sur

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

FAX: 886-3-328-4978 Issued Date : Apr. 08, 2019

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History of this test report

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Report No.	Version	Description	Issued Date	
FG8O1751C	01	Initial issue of report	Apr. 08, 2019	

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Summary of Test Result

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Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power and Effective Isotropic Radiated Power	Reporting only	-
3.3	-	Peak-to-Average Ratio	Reporting only	-
3.4	§27.50 (a)(3)	7.50 (a)(3) EIRP Power Density Pass		-
3.5	§2.1049	Occupied Bandwidth	Reporting only	-
3.6	§2.1051 §27.53 (a)(4)	Conducted Band Edge Measurement	Pass	-
3.7	§2.1051 §27.53 (a)(4)	Conducted Spurious Emission	Pass	-
3.8	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.4	§2.1053 §27.53 (a)(4)	Radiated Spurious Emission	Pass	Under limit 0.39 dB at 6924.000 MHz

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang

Report Producer: Nancy Yang

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1 General Description

1.1 Product Feature of Equipment Under Test

WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, and GNSS.

Product Specification subjective to this standard					
	WWAN: PIFA Antenna				
Antenna Type	WLAN: Internal Antenna				
	GPS/Glonass/BDS/Galileo: PIFA Antenna				

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1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Site

Test Site	SPORTON INTERNATIONAL INC.						
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456						
	FAX: +886-3-328-4978 Sporton Site No.						
Test Site No.	TH05-HY	03CH07-HY					
Temperature	22~25℃	23~25℃					
Relative Humidity	53~60%	53~56%					
Test Engineer	Jacky Wang	Stan Hsieh and Troye Hsieh					

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No. TW1190

1.4 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26-2015
- 47 CFR Part 2, Part 27(D)
- ANSI / TIA-603-E
- FCC KDB 971168 Power Meas License Digital Systems D01 v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

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Test Configuration of Equipment Under Test 2

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

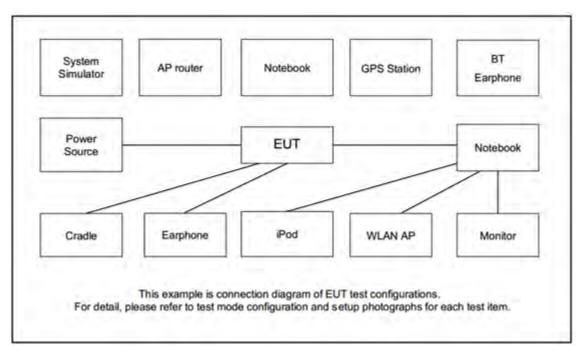
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For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

_		Bandwidth (MHz)				Modulation			RB#			Test Channel				
Test Items	Band	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	Н
Max. Output Power	30	-	•	v	v	-	•	٧	v	V	٧	v	v	٧	v	v
Peak-to-Avera ge Ratio	30	-	•		v	-	•	٧	v	٧	٧		V		v	
E.I.R.P PSD	30	-	1	>	v	-	1	>	v	٧	>			>	v	v
26dB and 99% Bandwidth	30	-	•	٧	v	-	•	٧	v	٧			v	٧	v	v
Conducted Band Edge	30	-	•	٧	v	-	•	٧	v	v	٧		٧	٧		v
Conducted Spurious Emission	30	-	•	٧	v	-	•	V	v	v	٧			v	v	v
Frequency Stability	30	-	•		v	-	•	٧					V		v	
Radiated Spurious Emission	30		Worst Case						v	v	v					
1. The mark "v" means that this cor 2. The mark "-" means that this band 3. The device is investigated from 3 different RB size/offset and modureported.			ndwidth 30MHz	is not to 10 t	supported imes of fu	l. ndamenta	•						nder			

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2.2 Connection Diagram of Test System



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2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example:

 $Offset(dB) = RF \ cable \ loss(dB) + attenuator \ factor(dB).$

= 4.2 + 10 = 14.2 (dB)

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2.5 Frequency List of Low/Middle/High Channels

LTE Band 30 Channel and Frequency List								
BW [MHz] Channel/Frequency(MHz) Lowest Middle Highest								
10	Channel	-	27710	-				
10	Frequency	-	2310	-				
E	Channel	27685	27710	27735				
5	Frequency	2307.5	2310	2312.5				

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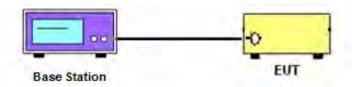
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

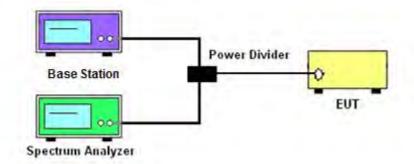
3.1.1 Test Setup

3.1.2 Conducted Output Power

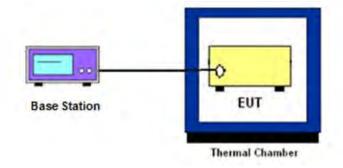


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3.1.3 Peak-to-Average Ratio, Occupied Bandwidth, 26dB Bandwidth ,Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

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3.2 Conducted Output Power Measurement and EIRP Measurement

3.2.1 Description of the Conducted Output Power Measurement and EIRP Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

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The EIRP of mobile transmitters must not exceed 0.25 Watts for LTE Band 30.

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T - L_C$, where

 P_T = transmitter output power in dBm

 G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

- 1. The transmitter output port was connected to the system simulator.
- 2. Set EUT at maximum power through the system simulator.
- 3. Select lowest, middle, and highest channels for each band and different modulation.
- 4. Measure and record the power level from the system simulator.

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3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

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3.3.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 5.7.1

- 1. The EUT was connected to spectrum and system simulator via a power divider.
- 2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- 3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
- 4. Record the deviation as Peak to Average Ratio.

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3.4 EIRP Power Density

3.4.1 Description of EIRP Power Density

For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

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3.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 5.4

- 1. Set instrument center frequency to OBW center frequency.
- 2. Set span to at least 1.5 times the OBW.
- 3. Set the RBW to the specified reference bandwidth (5MHz).
- 4. Set VBW ≥ 3 × RBW.
- 5. Detector = RMS (power averaging).
- 6. Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
- 7. Sweep time = auto couple.
- 8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).
- 10. Determine the EIRP by adding the effective antenna gain to the adjusted power level.

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3.5 Occupied Bandwidth

3.5.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is 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 transmitted power.

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The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 4.1 and 4.2

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
 The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
- 3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- 4. Set the detection mode to peak, and the trace mode to max hold.
- 5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
- 6. Determine the "-26 dB down amplitude" as equal to (Reference Value X).
- 7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "–X dB down amplitude" determined in step 6. If a marker is below this "-X dB down amplitude" value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
- 8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

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3.6 Conducted Band Edge Measurement

3.6.1 Description of Conducted Band Edge Measurement

27.53 (a)(4)

For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz.

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(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz.

(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.0

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- 2. The band edges of low and high channels for the highest RF powers were measured.
- 3. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
- 4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
- 5. Set spectrum analyzer with RMS detector.
- The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 7. Checked that all the results comply with the emission limit line.

The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

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3.7 Conducted Spurious Emission Measurement

3.7.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 70 + 10 log (P) dB.

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It is measured by means of a calibrated spectrum analyzer and scanned from 9 kHz up to a frequency including its 10th harmonic.

3.7.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.0.

- 1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
 The path loss was compensated to the results for each measurement.
- 3. The middle channel for the highest RF power within the transmitting frequency was measured.
- 4. The conducted spurious emission for the whole frequency range was taken.
- 5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
- 6. Set spectrum analyzer with RMS detector.
- 7. Taking the record of maximum spurious emission.
- 8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 9. The limit line is derived from 70 + 10log(P)dB below the transmitter power P(Watts)

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3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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3.8.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

- 1. The EUT was set up in the thermal chamber and connected with the system simulator.
- With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
- 3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.8.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

- 1. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
- 2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
- 3. The variation in frequency was measured for the worst case.

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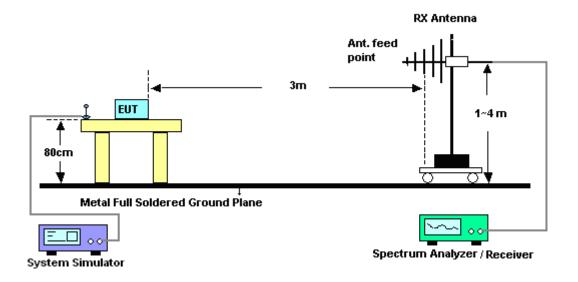
4 Radiated Test Items

4.1 Measuring Instruments

See list of measuring instruments of this test report.

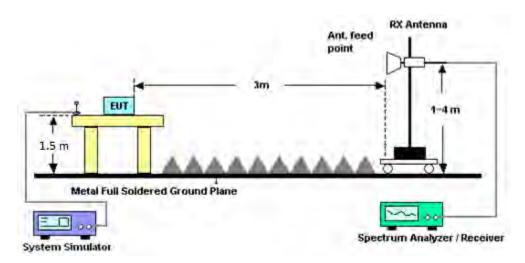
4.2 Test Setup

For radiated test from 30MHz to 1GHz



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For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

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4.4 Radiated Spurious Emission Measurement

4.4.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 70 + 10 log (P) dB.

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The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI / TIA-603-E Section 2.2.12.

- The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
- 2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
- 5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
- 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.

```
EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain ERP (dBm) = EIRP - 2.15
```

4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from 70 + 10log(P)dB below the transmitter power P(Watts)

```
= P(W) - [70 + 10log(P)] (dB)
```

```
= [30 + 10log(P)] (dBm) - [70 + 10log(P)] (dB)
```

= -40dBm.

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5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201432821	GSM/GPRS /WCDMA/LTE	Oct. 14, 2018	Dec. 10, 2018~ Dec. 28, 2018	Oct. 13, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 13, 2018	Dec. 10, 2018~ Dec. 28, 2018	Nov. 12, 2019	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40°C~90°C	Aug. 29, 2018	Dec. 10, 2018~ Dec. 28, 2018	Aug. 28, 2019	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 02, 2018	Dec. 10, 2018~ Dec. 28, 2018	Oct. 01, 2019	Conducted (TH05-HY)
Coupler	Woken	0.5-18G 10dB 30W	DOM5CIW3 A1	0.5-18GHz	Feb. 21, 2018	Dec. 10, 2018~ Dec. 28, 2018	Feb. 20, 2019	Conducted (TH05-HY)
Bilog Antenna	Schaffner	CBL6111C&		30MHz~1GHz	Oct. 13, 2018	Dec. 18, 2018 ~	Oct. 12, 2019	Radiation
		N-6-06	0601			Mar. 18, 2019		(03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 02, 2018	Dec. 18, 2018 ~ Mar. 18, 2019	Dec. 03, 2019	Radiation (03CH07-HY)
EMI Test Receiver	Agilopt	N9038A(MX	MY5329005	20Hz to	Jan. 16, 2018	Dec. 18, 2018 ~	Jan. 15, 2019	Radiation
EIVII Test Receiver	Agilent	E)	3	26.5GHz	Jan. 10, 2016	Dec. 20, 2018	Jan. 15, 2019	(03CH07-HY)
EMI Test Receiver	Agilent	N9038A(MX	MY5329005	20Hz to	Jan. 23, 2019	Mar. 18, 2019	Jan. 22, 2020	Radiation
		E)	3	26.5GHz				(03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz-1GHz	May. 21, 2018	Dec. 18, 2018 ~	May. 20, 2019	Radiation
						Mar. 18, 2019	-	(03CH07-HY)
Preamplifier	Agilent	8449B	3008A0236 2	1GHz~ 26.5GHz	Nov. 02, 2018	Dec. 18, 2018 ~ Mar. 18, 2019	Nov. 01, 2019	Radiation (03CH07-HY)
	HUBER +	SUCOFLEX	MY28655/4,			Dec. 18, 2018 ~		Radiation
RF Cable	SUHNER	104	MY24971/4,	30MHz~1GHz	Feb. 27, 2018	Dec. 20, 2018	Feb. 26, 2019	(03CH07-HY)
			MY15682/4			200. 20, 2010		(0001107 111)
	HUBER +	SUCOFLEX	MY28655/4,					Radiation
RF Cable	SUHNER	104	MY24971/4,	30MHz~1GHz	Feb. 26, 2019	Mar. 18, 2019	Feb. 25, 2020	(03CH07-HY)
			MY15682/4					
RF Cable	HUBER +	SUCOFLEX	MY28655/4, MY24971/4,	1GHz~18GHz	Feb. 27, 2018	Dec. 18, 2018 ~	Feb. 26, 2019	Radiation
	SUHNER	104	MY15682/4			Dec. 20, 2018		(03CH07-HY)
	UI IDED ±	SUCCELEY	MY28655/4,					Radiation
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4,	1GHz~18GHz	Feb. 26, 2019	Mar. 18, 2019	Feb. 25, 2020	(03CH07-HY)
	COLLINEIX	107	MY15682/4					(0001107-111)
Controller	ChainTek	Chaintek 3000	N/A	Control Turn table	N/A	Dec. 18, 2018 ~ Mar. 18, 2019	N/A	Radiation (03CH07-HY)

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			MF7802083	Control Ant		Dec. 18, 2018 ~		Radiation
Controller	Max-Full	MF7802	68	Mast	N/A	Mar. 18, 2019	N/A	(03CH07-HY)
						Dec. 18, 2018 ~		Radiation
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Mar. 18, 2019	N/A	(03CH07-HY)
		Chaintek				Dec. 18, 2018 ~		Radiation
Turn Table	ChainTek	3000	N/A	0~360 Degree	N/A	Mar. 18, 2019	N/A	(03CH07-HY)
		TTA1840-35		18GHz~40GHz,		Dec. 18, 2018 ~		Radiation
Amplifier	MITEQ	-HG	1871923	VSWR : 2.5:1	Jul. 16, 2018	Mar. 18, 2019	Jul. 15, 2019	(03CH07-HY)
		110		max		Wat. 10, 2010		(0001107-1117)
Software	Audix	E3	RK-001042	N/A	N/A	Dec. 18, 2018 ~	N/A	Radiation
Continuio	/ todix	6.2009-8-24	141 00 10 12	11// 1	1 17 1	Mar. 18, 2019	1071	(03CH07-HY)
Horn Antenna	ESCO	3117	00143261	1GHz~18GHz	Dec. 27, 2017	Dec. 18, 2018 ~	Dec. 26, 2018	Radiation
Tiom/ titering	2000	0117	00140201	10112 100112	DG0. 21, 2011	Dec. 20, 2018	DC0. 20, 2010	(03CH07-HY)
Horn Antenna	ESCO	3117	00066584	1GHz~18GHz	Sep. 17, 2018	Mar. 18, 2019	Sep. 16, 2019	Radiation
Tiom / titorina	2000	0117	0000004	10112 100112	оср. 17, 2010	Wat. 10, 2010	OCP. 10, 2010	(03CH07-HY)
Filter	Microwave	H3G018G1	SN477220	3.0G High Pass	Aug. 23, 2018	Dec. 18, 2018 ~	Aug. 22, 2019	Radiation
T IIICI	Wildiowave	110001001	01477220	5.00 Flight 433	Aug. 20, 2010	Mar. 18, 2019	Aug. 22, 2010	(03CH07-HY)
Signal Generator	Anritsu	MG3694C	163401	0.1Hz~40GHz	Jan. 15, 2018	Dec. 18, 2018 ~	Jan. 14, 2019	Radiation
Signal Generalor	Aiiitsu	WG3094C	103401	0.1112**400112	Jan. 15, 2016	Dec. 20, 2018	Jan. 14, 2019	(03CH07-HY)
Signal Generator	Rohde &	SMF100A	101107	100kHz~40GHz	May 22 2019	Mar. 18, 2019	May. 21, 2019	Radiation
Olyriai Gerierator	Schwarz	SIVII TOUA	101107	100KI 12~40GHZ	iviay. 22, 2010	IVIAI. 10, 2019	Iviay. 21, 2019	(03CH07-HY)
SHF-EHF Horn	SCHWARZBE	BBHA 9170	BBHA91705	18GHz- 40GHz	Dec. 05, 2018	Dec. 18, 2018 ~	Dec. 04, 2019	Radiation
Antenna	CK	DDI IA 9170	84	100112-400112	DCC. 00, 2010	Mar. 18, 2019	DCC. 04, 2019	(03CH07-HY)

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6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of	3.05
Confidence of 95% (U = 2Uc(y))	0.00

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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of	2.44
Confidence of 95% (U = 2Uc(y))	3.44

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of	3.95
Confidence of 95% (U = 2Uc(y))	3.95

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Appendix A. Test Results of Conducted Test

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Conducted Output Power(Average power)

LTE Band 30 Maximum Average Power [dBm]											
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest					
10	1	0			21.58						
10	1	25			21.55						
10	1	49			21.54						
10	25	0	QPSK		20.54						
10	25	12			20.56]					
10	25	25			20.56						
10	50	0			20.61]					
10	1	0			20.87						
10	1	25			20.82						
10	1	49			20.87						
10	25	0	16-QAM	-	19.60	-					
10	25	12			19.60						
10	25	25			19.56]					
10	50	0			19.58						
10	1	0			19.74						
10	1	25			19.64						
10	1	49			19.80]					
10	25	0	64-QAM		18.60						
10	25	12			18.60						
10	25	25			18.62]					
10	50	0			18.58						
5	1	0		21.44	21.58	21.48					
5	1	12		21.37	21.57	21.52					
5	1	24		21.40	21.56	21.54					
5	12	0	QPSK	20.66	20.71	20.71					
5	12	7		20.68	20.74	20.82					
5	12	13		20.68	20.69	20.82					
5	25	0		20.53	20.63	20.71					
5	1	0		20.80	20.92	20.82					
5	1	12		20.76	20.91	20.94					
5	1	24		20.70	20.88	20.92					
5	12	0	16-QAM	19.68	19.72	19.82					
5	12	7		19.71	19.72	19.88					
5	12	13		19.67	19.75	19.85					
5	25	0		19.53	19.70	19.69					
5	1	0		19.74	19.90	19.82					
5	1	12	64-QAM	19.68	19.77	19.80					
5	1	24		19.73	19.84	19.84					
5	12	0		18.76	18.67	18.77					
5	12	7		18.74	18.92	18.86					
5	12	13		18.77	18.89	18.88					
5	25	0		18.65	18.79	18.88					

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LTE Band 30

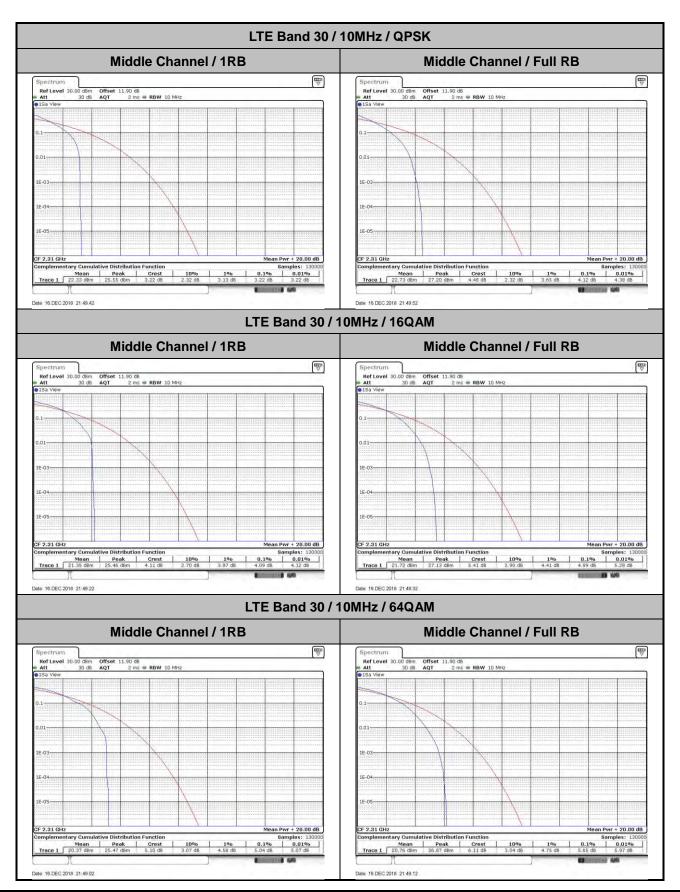
Peak-to-Average Ratio

Mode					
Mod.	QP	SK	160	Limit: 13dB	
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	-	-	-	-	
Middle CH	3.22	4.12	4.09	4.99	PASS
Highest CH	-	-	-	-	
Mode		LTE Band	30 / 10MHz		
Mod.	64Q	AM			Limit: 13dB
RB Size	1RB	Full RB			Result
Lowest CH	-	-	-	-	
Middle CH	5.04	5.65	-	-	PASS
Highest CH	-	-	-	-	

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EIRP Power Density

Mode		LTE Band 30 : Conducted Power Density (dBm/5MHz)											
BW	1.4MHz 3MHz			lHz	5M	lHz	10MHz		15MHz		20MHz		
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	
Lowest CH	-	-	-	-	21.31	20.79	-	-	-	-	-	-	
Middle CH	-	-	-	-	21.29	20.9	21.21	20.62	-	-	-	-	
Highest CH	-	-	-	-	21.46	20.56	-	-	-	-	-	-	
Mode			LT	E Band	30 : Con	ducted I	Power D	ensity (c	IBm/5MH	Hz)			
BW	1.4	ИHz	3MHz		5MHz		10MHz		15MHz		20MHz		
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM		
Lowest CH	-	-	-	-	19.80	-	-	-	-	-	-	-	
Middle CH	-	-	-	-	19.68	-	19.74	-	-	-	-	-	
Highest CH	-	-	-	-	19.86	-	-	-	-	-	-	-	

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Mode		LTE Band 30 : EIRP Power Density (dBm/5MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz		
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	
Lowest CH	-	-	-	-	23.71	23.19			-	-	-	-	
Middle CH	-	-	-	-	23.69	23.3	23.61	23.02	-	-	-	-	
Highest CH	-	-	-	-	23.86	22.96			-	-	-	-	
Mode		LTE Band 30 : EIRP Power Density (dBm/5MHz)											
BW	1.40	ЛHz	3MHz		5MHz		10MHz		15MHz		20MHz		
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM		
Lowest CH	-	-	-	-	22.2	-	-	-	-	-	-	-	
Middle CH	-	-	-	-	22.08	-	22.14	-	-	-	-	-	
Highest CH	-	-	-	-	22.26	-	-	-	-	-	-	-	
Antenna Gain						2.4	dBi						
Limit					250mW	/ 5MHz :	= 24dBm	/5MHz					
Result						Pa	ss						

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Report No.:FG8O1751C LTE Band 30 / 5MHz Lowest Channel / 5MHz / 1RB0 / QPSK Lowest Channel / 5MHz / 1RB0 / 16QAM Ref Level 30.00 dBm Offset 11.90 dB RBW 5 MHz
Att 30 dB SWT 1 ms VBW 20 MHz Mode Auto Sweep
615m AvgPwr \vec{\pi}
 Ref Level
 30.00 dBm
 Offset
 11.90 dB
 RBW
 5 MHz

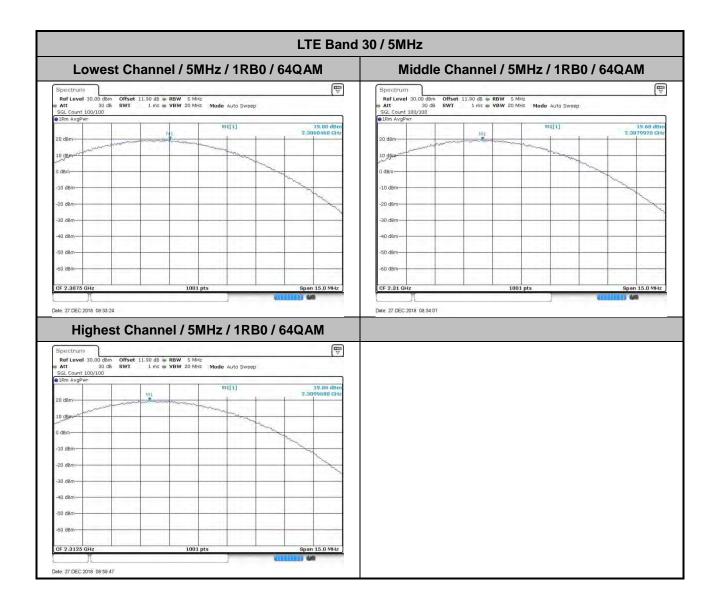
 Att
 30 dB
 SWT
 1 ms
 VBW
 20 MHz
 Mode
 Auto Sweep
 21.31 dBn 2.3055670 GH MI 601 Date: 27 DEC 2018 08:32:21 Date: 27 DEC 2018 08:32:42 Middle Channel / 5MHz / 1RB0 / QPSK Middle Channel / 5MHz / 1RB0 / 16QAM T V Ref Level 30,00 dem Offset 11,90 d8 RBW 5 MHz
Att 30 d8 SWT 1 ms VBW 20 MHz Mode Auto Sweep
SGL Count 100/100 Ref Level 30.00 d8m Offset 11,90 d8 RBW 5 MHz
Att 30 d8 SWT 1 ms VBW 20 MHz Mode Auto Sweep
50C Count 100/100
10m AvgPwr 21.29 dBm 2.3079170 GHz Highest Channel / 5MHz / 1RB0 / 16QAM Highest Channel / 5MHz / 1RB0 / QPSK 21.46 dBn 2.3101320 GH M1[1] MITTI

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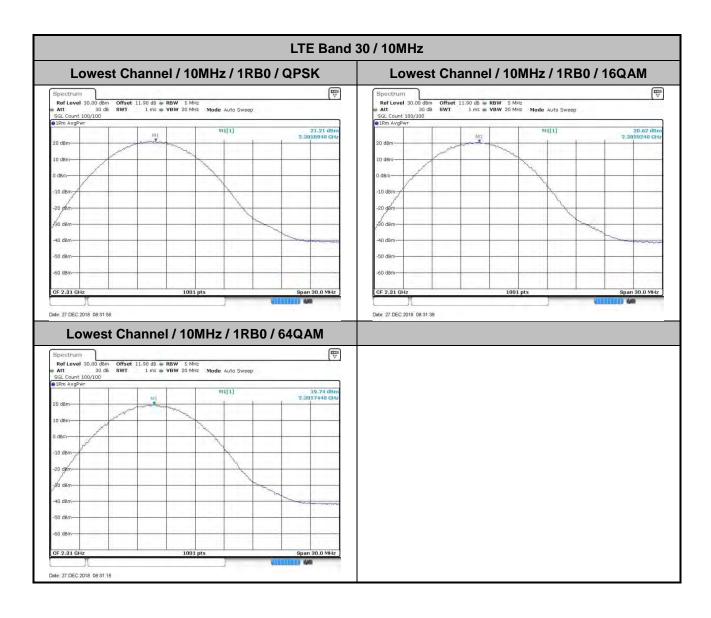
Date: 27 DEC 2018 09:03:28

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26dB Bandwidth

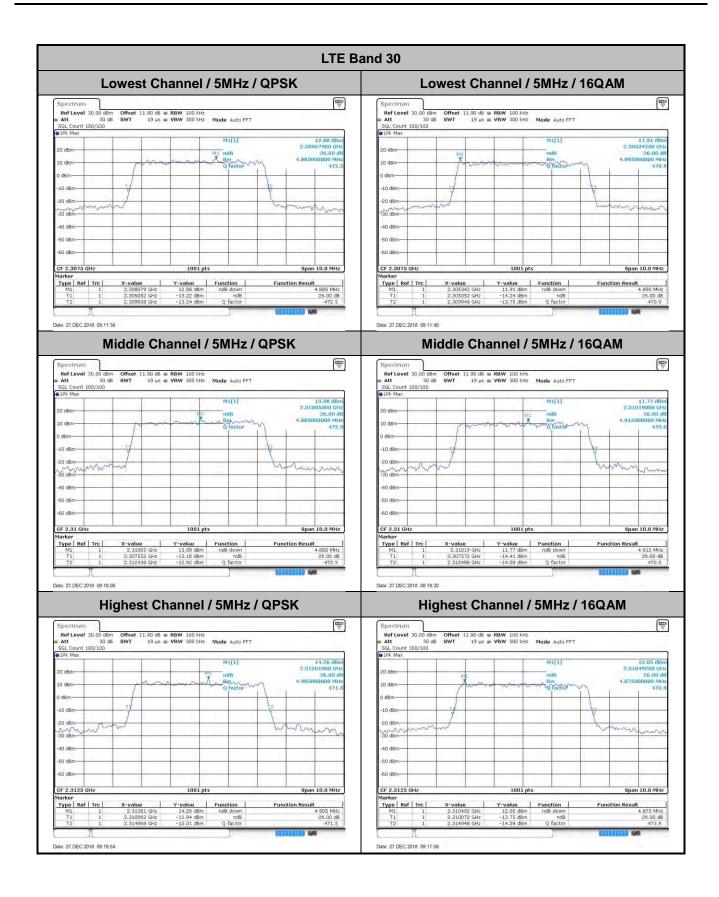
Mode	LTE Band 30 : 26dB BW(MHz)											
BW	1.4	ИHz	3M	3MHz		5MHz		10MHz		15MHz		ИHz
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.89	4.90	-	-	-	-	-	-
Middle CH	-	-	-	-	4.89	4.92	9.77	9.79	-	-	-	-
Highest CH	-	-	-	-	4.91	4.88	-	-	-	-	-	-
Mode					LTE Ba	and 30 :	26dB BV	V(MHz)				
BW	1.4	ИHz	3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	-	-	-	-	4.91	-	-	-	-	-	-	-
Middle CH	-	-	-	-	4.89	-	9.69	-	-	-	-	-
Highest CH	-	-	-	-	4.96	-	-	-	-	-	1	-

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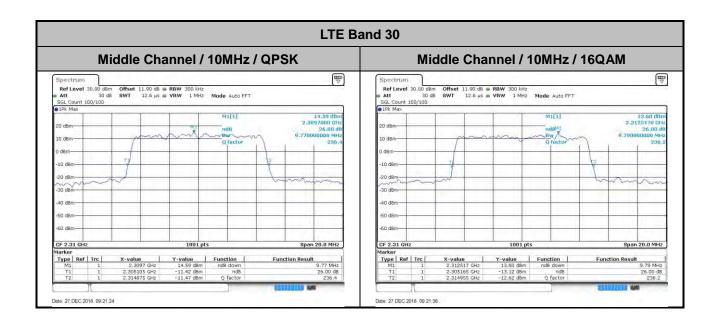


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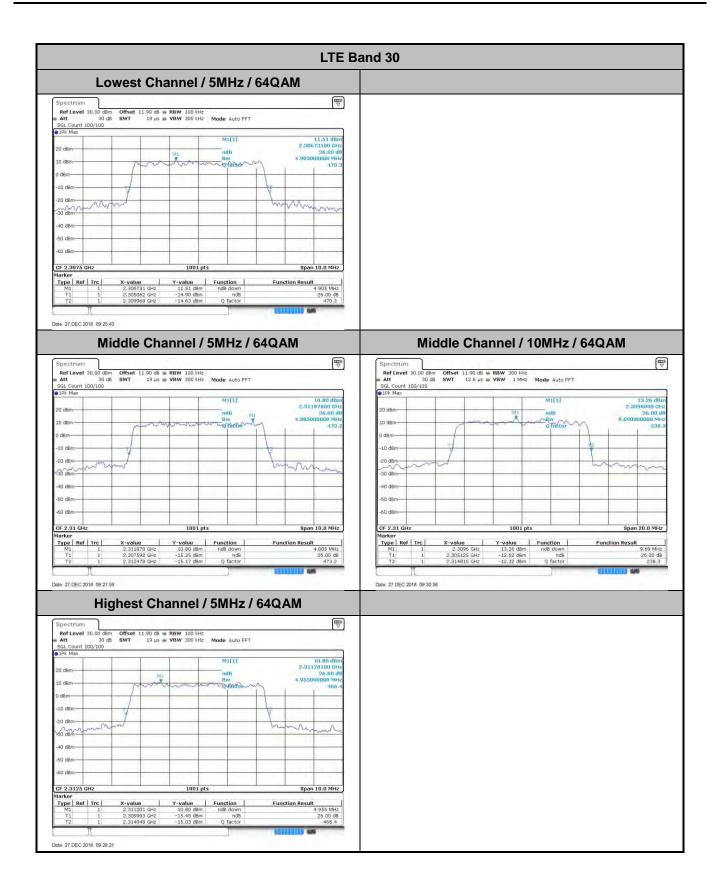




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Occupied Bandwidth

Mode		LTE Band 30 : 99%OBW(MHz)											
BW	1.4	ИHz	3M	lHz	5M	lHz	10MHz		15MHz		20MHz		
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	
Lowest CH	-	-	-	-	4.51	4.49	-	-	-	-	-	-	
Middle CH	-	-	-	-	4.49	4.49	9.05	9.01	-	-	-	_	
Highest CH	-	-	-	-	4.49	4.51	-	-	-	-	-	_	
Mode					LTE Ba	and 30 :	99%OBV	V(MHz)					
BW	1.4	ИHz	3MHz		5MHz		10MHz		15MHz		20MHz		
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM		
Lowest CH	-	-	-	-	4.49	-	-	-	-	-	-	-	
Middle CH	-	-	-	-	4.50	-	9.03	-	-	-	-	-	
Highest CH	-	-	-	-	4.53	-	-	-	-	-	ı	-	

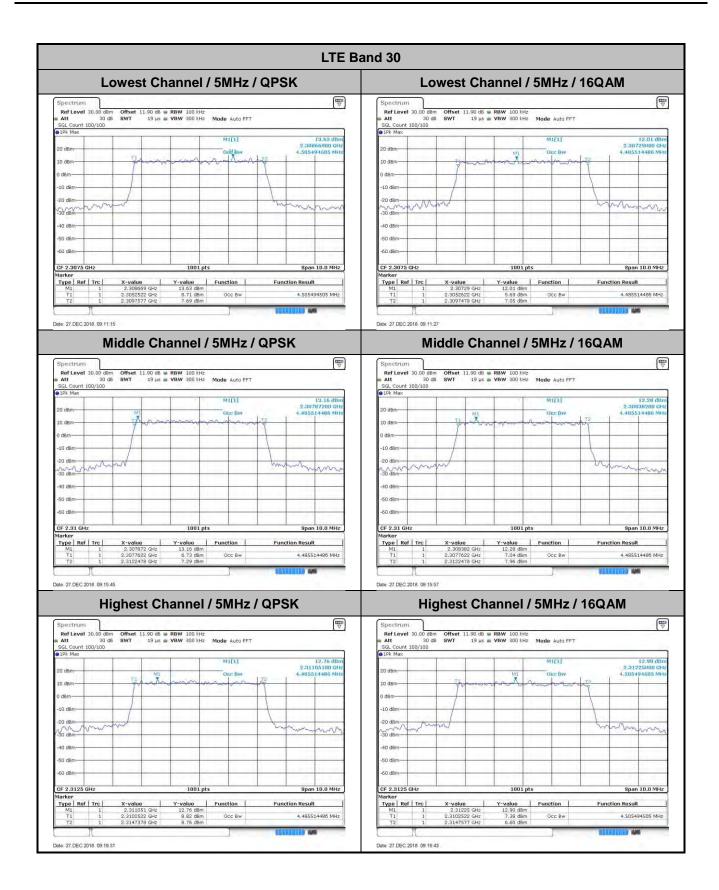
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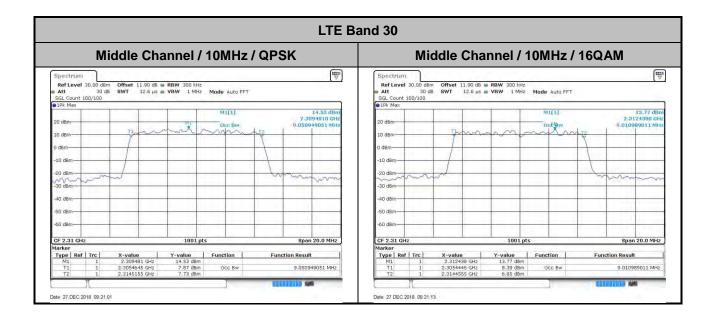
FAX: 886-3-328-4978

CC RADIO TEST REPORT Report No. :FG801751C



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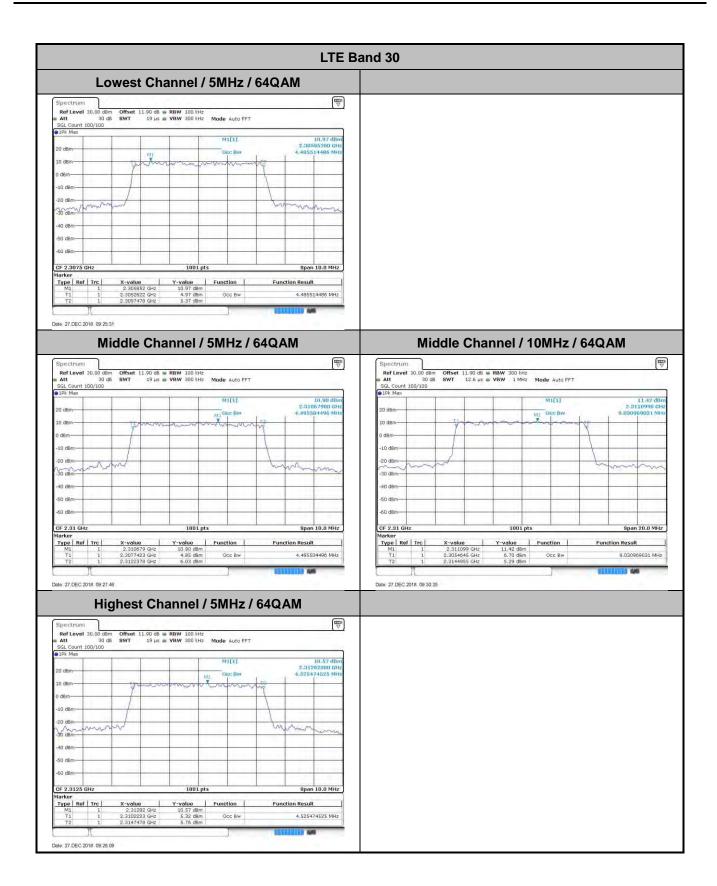




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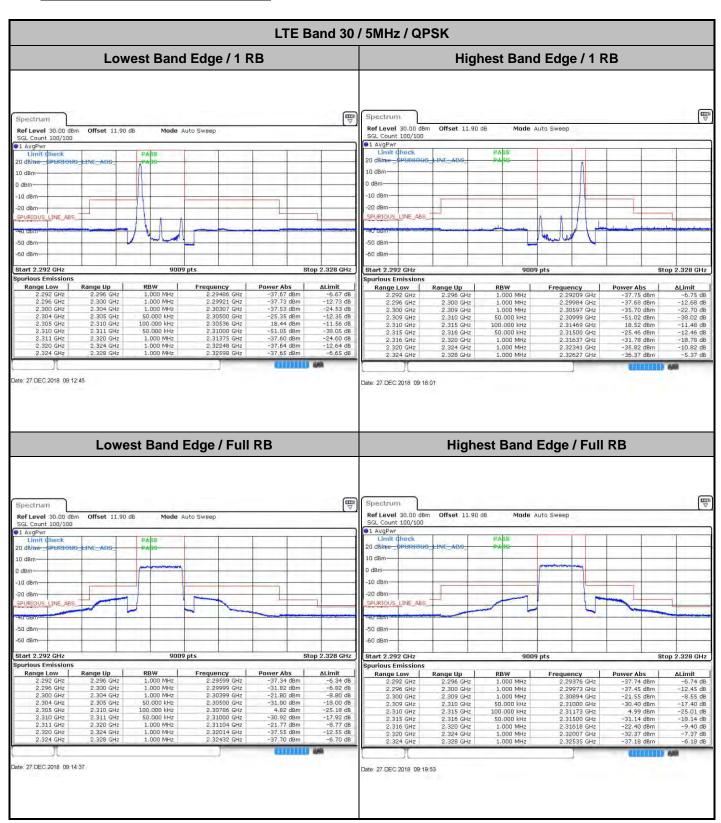
C RADIO TEST REPORT Report No. :FG801751C



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Conducted Band Edge

FAX: 886-3-328-4978



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Report No.: FG8O1751C LTE Band 30 / 5MHz / 16QAM Highest Band Edge / 1 RB Lowest Band Edge / 1RB Spectrum Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep Ref Level 30.00 Offset 11.90 dB Mode Auto Sweet Count 100/100 SGL Count 100/100 1 AvgPwr ●1 AvgPwr Limit ¢heck 20 dame 10 dBm--10 dBm -20 dBm -20 dBm LINE ABS PURIOUS LINE ABS 50 dBm -50 dBm--60 dBm--60 dBm-Start 2.292 GHz rious Emissions rious Emission 2.296 GHz 2.300 GHz Frequency 2.29539 GHz Range Low 2.292 GHz Power Abs -37,54 dBr ∆Limit -6.54 Range Up -6.72 dB -6.72 dB -12.34 dB -24.77 dB -38.08 dB -12.16 dB -13.48 dB -20.77 dB -11.78 dB -6.17 dB -37.54 dBm -37.67 dBm -37.44 dBm -26.22 dBm 17.47 dBm -51.13 dBm -37.98 dBm -37.64 dBm -37.66 dBm -6.54 dB -12.67 dB -24.44 dB -13.22 dB -12.53 dB -38.13 dB -24.98 dB -12.64 dB -6.66 dB 2.292 GHz 2.296 GHz 2.300 GHz 2.309 GHz 2.310 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 2.296 GHz 2.300 GHz 2.309 GHz 2.310 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 2.328 GHz 1.000 MHz 1.000 MHz 1.000 MHz 50.000 kHz 100.000 kHz 50.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 2.29256 GHz 2.29611 GHz 2.30615 GHz 2.30997 GHz 2.31462 GHz 2.31500 GHz 2.31682 GHz 2.32015 GHz 2.32526 GHz 1.000 MHz 1.000 MHz .29909 GHz .30397 GHz 2.304 GHz 2.305 GHz 2.310 GHz 2.311 GHz 2.320 GHz 2.324 GHz 2.328 GHz 2.30397 GHZ 2.30500 GHZ 2.30532 GHZ 2.31003 GHZ 2.31394 GHZ 2.32174 GHZ 2.32713 GHZ .304 GHz .305 GHz .310 GHz .311 GHz Date: 27 DEC.2018 09:13:41 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** H P Spectrum Spectrum Offset 11.90 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep SGL Count 100/100 e1 AvgPwr Limit Check 1 AvgPwr Limit Check 20 dBime 10 dBm 10 dBm dBm -10 dBm--10 dBm-20 dBm -20 dBm-SPURIOUS LINE ABS PURIOUS 50 dBm 60 dBm Start 2.292 GHz 9009 pts Stop 2.328 GHz Start 2.292 GHz Stop 2.328 GHz rious Emissions urious Emissions Power Abs
-37.63 dBm
-31.90 dBm
-21.28 dBm
-31.57 dBm
-31.46 dBm
-21.40 dBm
-37.43 dBm
-37.74 dBm Durious Emission Range Low 2.292 GHz 2.296 GHz 2.300 GHz 2.300 GHz 2.310 GHz 2.315 GHz 2.315 GHz 2.316 GHz 2.316 GHz 2.320 GHz 2.324 GHz nge Up 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.310 GHz 2.311 GHz 2.320 GHz 2.324 GHz RBW 1,000 MHz 1,000 MHz 1,000 MHz 50,000 kHz 100,000 kHz 1,000 MHz 1,000 MHz 2.29573 GHz 2.29573 GHz 2.29989 GHz 2.30399 GHz 2.30499 GHz 2.30661 GHz Range Up -6.63 dB -6.90 dB -8.28 dB -18.57 dB -26.06 dB -18.46 dB -8.40 dB -12.43 dB -6.74 dB 2.292 GHz 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.31001 GHz 2.31001 GHz 2.31102 GHz 2.32023 GHz 2.310 GHz 2.311 GHz

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Date: 27 DEC:2018 09:20:49

FAX: 886-3-328-4978

ate: 27 DEC 2018 09:15:33

LTE Band 30 / 5MHz / 64QAM Highest Band Edge / 1 RB Lowest Band Edge / 1RB Spectrum Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep Ref Level 30.00 Offset 11.90 dB Mode Auto Sweet Count 100/100 SGL Count 100/100 1 AvgPwr ●1 AvgPwr Limit ¢heck 20 dame 10 dBm--10 dBm -20 dBm -20 dBm INE ABS PURIOUS LINE ABS 50 dBm -50 dBm-60 dBm--60 dBm-Start 2.292 GHz rious Emissions rious Emission: 2.296 GHz 2.300 GHz Frequency 2.29525 GHz Range Low 2.292 GHz Power Abs -37,38 dBn ∆Limit Range Up 37.38 dBm -37.65 dBm -37.76 dBm -27.41 dBm 16.59 dBm -51.21 dBm -38.34 dBm -37.65 dBm -37.68 dBm -6.38 dB -12.65 dB -24.76 dB -14.41 dB -13.41 dB -38.21 dB -25.34 dB -12.65 dB -6.68 dB 2.292 GHz 2.296 GHz 2.300 GHz 2.309 GHz 2.310 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 2.296 GHz 2.300 GHz 2.309 GHz 2.310 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 2.328 GHz 1.000 MHz 1.000 MHz 1.000 MHz 50.000 kHz 100.000 kHz 50.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz -6.69 dB -12.79 dB -24.75 dB -38.13 dB -13.34 dB -14.38 dB -24.42 dB -12.42 dB -6.66 dB 2.29468 GHz 2.29673 GHz 2.30575 GHz 2.30996 GHz 2.31466 GHz 2.31500 GHz 2.31572 GHz 2.32166 GHz 2.32433 GHz 1.000 MHz 1.000 MHz .29972 GHz .30340 GHz 2.304 GHz 2.305 GHz 2.310 GHz 2.311 GHz 2.320 GHz 2.324 GHz 2.328 GHz 2.30340 GHZ 2.30499 GHZ 2.30534 GHZ 2.31096 GHZ 2.31223 GHZ 2.32197 GHZ 2.32774 GHZ .304 GHz .305 GHz .310 GHz .311 GHz Date: 27 DEC 2018 09:26:38 Lowest Band Edge / Full RB **Highest Band Edge / Full RB** T V Spectrum Spectrum Offset 11.90 dB Mode Auto Sweep Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep SGL Count 100/100 e1 AvgPwr Limit Check 1 AvgPwr Limit Check 20 dBime 10 dBm 10 dBm dBm -10 dBm--10 dBm-20 dBm -20 dBm-SPURIOUS LINE ABS PURIOUS 50 dBm 60 dBm Start 2.292 GHz 9009 pts Stop 2.328 GHz Start 2.292 GHz Stop 2.328 GHz rious Emissions urious Emissions Durious Emission Range Low 2.292 GHz 2.296 GHz 2.300 GHz 2.300 GHz 2.310 GHz 2.315 GHz 2.315 GHz 2.316 GHz 2.316 GHz 2.320 GHz 2.324 GHz nge Up 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.310 GHz 2.311 GHz 2.320 GHz 2.324 GHz RBW 1,000 MHz 1,000 MHz 1,000 MHz 50,000 kHz 100,000 kHz 1,000 MHz 1,000 MHz ALimit
-6.44 dB
-8.37 dB
-8.49 dB
-19.25 dB
-27.22 dB
-19.11 dB
-9.16 dB
-12.49 dB
-6.46 dB Range Up 2.292 GHz 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.31001 GHz 2.31109 GHz 2.32009 GHz 2.310 GHz 2.311 GHz ate: 27 DEC 2018 09:27:34 Date: 27 DEC:2018 09:30:12

Report No.: FG8O1751C

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LTE Band 30 / 10MHz / QPSK Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep Ref Level 30.00 Offset 11.90 dB Mode Auto Sweet Count 100/100 SGL Count 100/100 1 AvgPwr ●1 AvgPwr Limit ¢heck 20 dame 10 dBm--10 dBm -20 dBm -20 dBm-INE ABS PURIOUS LINE ABS 50 dBm -50 dBm 60 dBm--60 dBm-Start 2.292 GHz rious Emissions rious Emission 97.65 dBm -37.65 dBm -37.44 dBm -37.90 dBm -35.26 dBm 18.55 dBm -48.02 dBm -37.74 dBm -37.05 dBm -37.69 dBm RBW

1,000 MHz
1,000 MHz
1,000 MHz
100,000 kHz
100,000 kHz
1,000 MHz
1,000 MHz
1,000 MHz
1,000 MHz Frequency
2.29376 GHz
2.29667 GHz
2.30079 GHz
2.30500 GHz
2.31439 GHz
2.31500 GHz
2.31500 GHz
2.31500 GHz
2.31500 GHz 2.296 GHz 2.300 GHz 2.304 GHz Frequency 2.29221 GHz Range Low 2.292 GHz ∆Limit -6.65 -6.65 dB -12.44 dB -24.90 dB -22.26 dB -11.45 dB -35.02 dB -24.74 dB -12.05 dB -6.69 dB 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 2.328 GHz 2.29221 GHz 2.29702 GHz 2.30388 GHz 2.30500 GHz 2.30557 GHz 2.31511 GHz 2.31572 GHz 2.32303 GHz 2.32409 GHz 2.292 GHz 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 1.000 MHz 1.000 MHz Date: 27 DEC.2018 09.22:31 Date: 27 DEC:2018 09:24:23 Band Edge / Full RB **B** Spectrum Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr 20 daine PURIOU 10 dBm 0 dBm -10 dBm -20 dBm SPURIOUS 40 dBm -50 dBm -60 dBm-9009 pts Stop 2.328 GHz Start 2.292 GHz Spurious Emissions ΔLimit -1.97 dB -1.92 dB Range Low Range Up 2,296 GHz RBW Frequency 2.29599 GHz Power Abs -32,97 dBm 1.000 MHz 2.292 GHz 2,296 GHz 2,300 GHz 1.000 MHz 2.29995 GHz -26.92 dBm 2.300 GHz 2.304 GHz 1.000 MHz 30386 GHz -24.11 dBm -11.11 dB -19.34 dB -27.88 dB 2.304 GHz 2,305 GHz 100.000 kHz .30500 GHz -32.34 dBm 2.305 GHz 2.31120 GHz 2.12 dBm -31.72 dBm 2.315 GHz 100,000 kHz 2.316 GHz 100.000 kHz -18.72 dB

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1.000 MHz

1.000 MHz

1.000 MHz

2.31620 GHz

2.32001 GHz

2.32401 GHz

-23.14 dBm

-26.10 dBm

-33.83 dBm

-10.14 dB

-1.10 dB

-2.83 dB

2.320 GHz 2.324 GHz

2,328 GHz

2.316 GHz

2.320 GHz

2.324 GHz

LTE Band 30 / 10MHz / 16QAM Lowest Band Edge / 1 RB Highest Band Edge / 1 RB Spectrum Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep Ref Level 30.00 Offset 11.90 dB Mode Auto Sweet Count 100/100 SGL Count 100/100 1 AvgPwr ●1 AvgPwr Limit ¢heck 20 dame 10 dBm--10 dBm -20 dBm -20 dBm-INE ABS PURIOUS LINE ABS 50 dBm -50 dBm--60 dBm--60 dBm-Start 2.292 GHz rious Emissions rious Emission 97.79 dBm -37.79 dBm -37.59 dBm -37.59 dBm -35.20 dBm 17.42 dBm -48.07 dBm -38.23 dBm -37.31 dBm -37.73 dBm RBW

1,000 MHz
1,000 MHz
1,000 MHz
100,000 kHz
100,000 kHz
1,000 MHz
1,000 MHz
1,000 MHz Frequency
2.29507 GHz
2.29688 GHz
2.30397 GHz
2.30499 GHz
2.31443 GHz
2.31501 GHz
2.31501 GHz
2.31250 GHz
2.32250 GHz
2.32452 GHz 2.296 GHz 2.300 GHz 2.304 GHz Range Low 2.292 GHz Frequency 2.29412 GHz ∆Limit ALimit
-5.98 dB
-11.92 dB
-23.77 dB
-35.05 dB
-12.10 dB
-21.77 dB
-24.50 dB
-12.14 dB
-6.05 dB -6.79 dB -12.59 dB -24.55 dB -22.20 dB -12.58 dB -35.07 dB -25.23 dB -12.31 dB -6.73 dB 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 2.328 GHz 2.292 GHz 2.296 GHz 2.300 GHz 2.304 GHz 2.305 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.324 GHz 2.29839 GHz 2.30397 GHz 1.000 MHz 1.000 MHz 2.30397 GHZ 2.30500 GHZ 2.30561 GHZ 2.31589 GHZ 2.31882 GHZ 2.32332 GHZ 2.32497 GHZ Date: 27 DEC.2018 09.23:27 Date: 27 DEC:2018 09:25:19 Band Edge / Full RB **B** Spectrum Ref Level 30.00 dBm Offset 11.90 dB Mode Auto Sweep SGL Count 100/100 1 AvgPwr 20 daine PURIOU 10 dBm 0 dBm -10 dBm -20 dBm-LINE_ABS SPURIOUS 40 dBm -50 dBm -60 dBm-9009 pts Stop 2.328 GHz Start 2.292 GHz Spurious Emissions Range Low Range Up 2,296 GHz RBW Frequency 2.29583 GHz Power Abs -33.98 dBm -2,98 dB -1,74 dB 1.000 MHz 2.292 GHz 2,296 GHz 2,300 GHz 1.000 MHz 2.29994 GHz -26.74 dBm 2.300 GHz 2.304 GHz 1.000 MHz 30391 GHz -23.66 dBm -10.66 dB -19.28 dB -29.06 dB 2.304 GHz 2,305 GHz 100.000 kHz 30500 GHz -32.28 dBm 2.305 GHz 2.30898 GHz 2.315 GHz 100.000 kHz 0.94 dBm

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100.000 kHz

1.000 MHz

1.000 MHz

1.000 MHz

-32.01 dBm

-23.41 dBm

-26.64 dBm

-33.71 dBm

2.31652 GHz

2.32013 GHz

2.32409 GHz

-19.01 dB

-10.41 dB

-1.64 dB

-2.71 dB

2.316 GHz

2.320 GHz 2.324 GHz

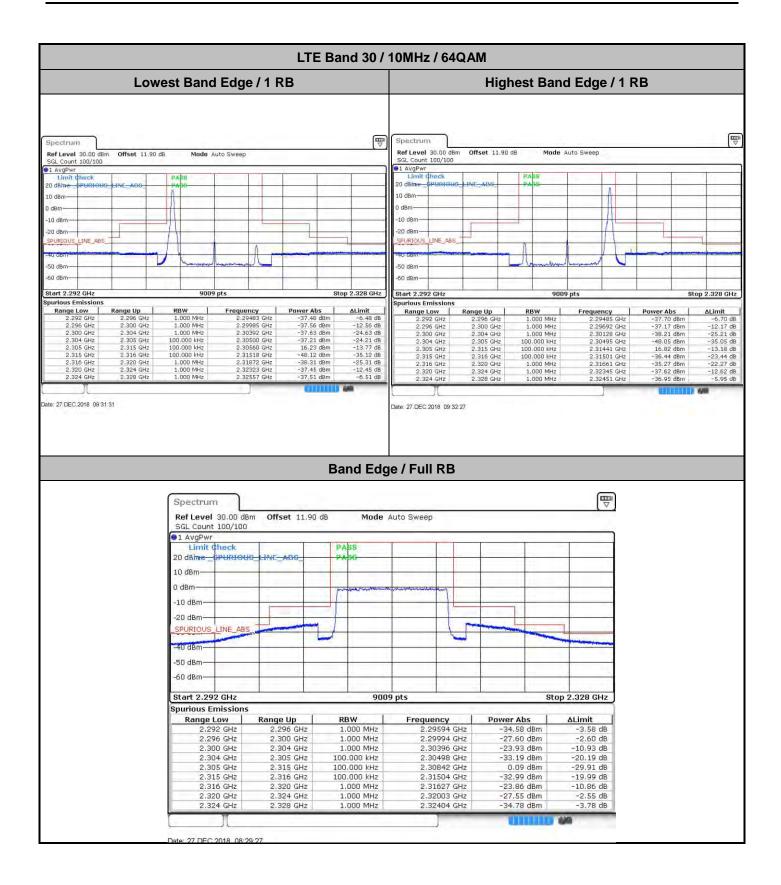
2,328 GHz

2.316 GHz

2.320 GHz

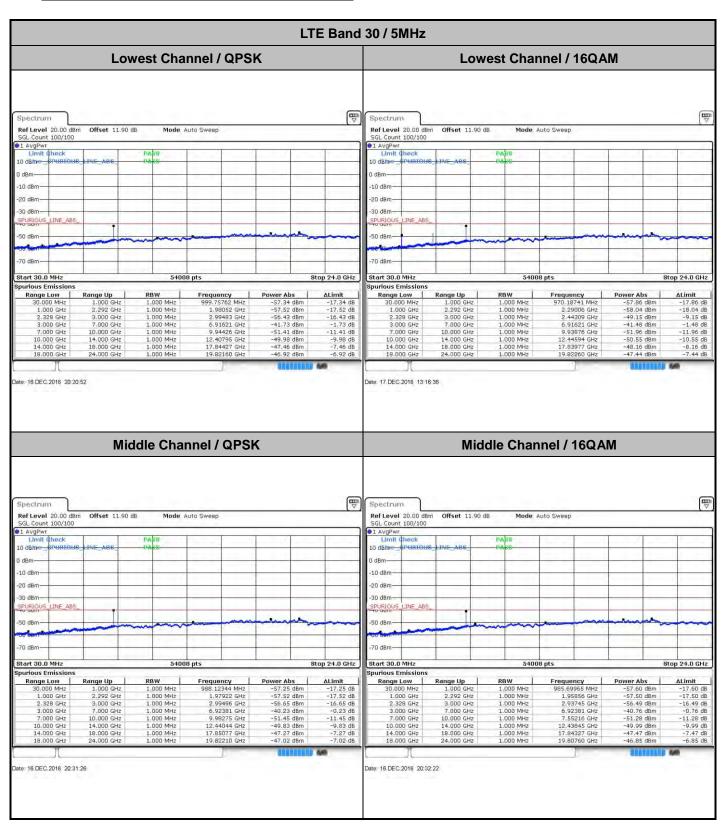
2.324 GHz

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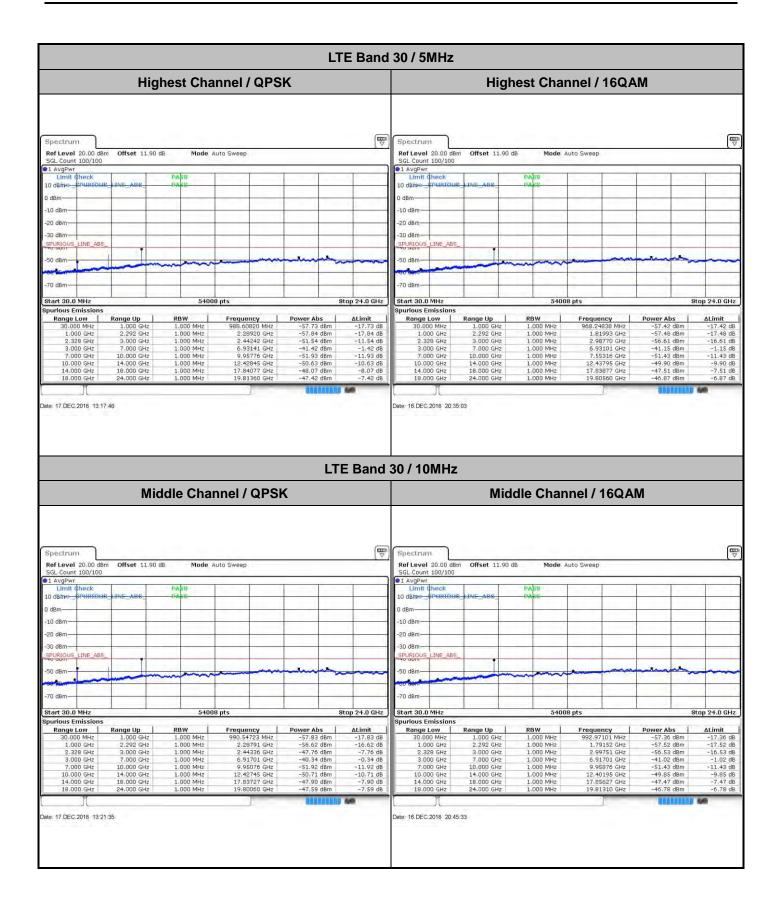
Conducted Spurious Emission



Report No.: FG8O1751C

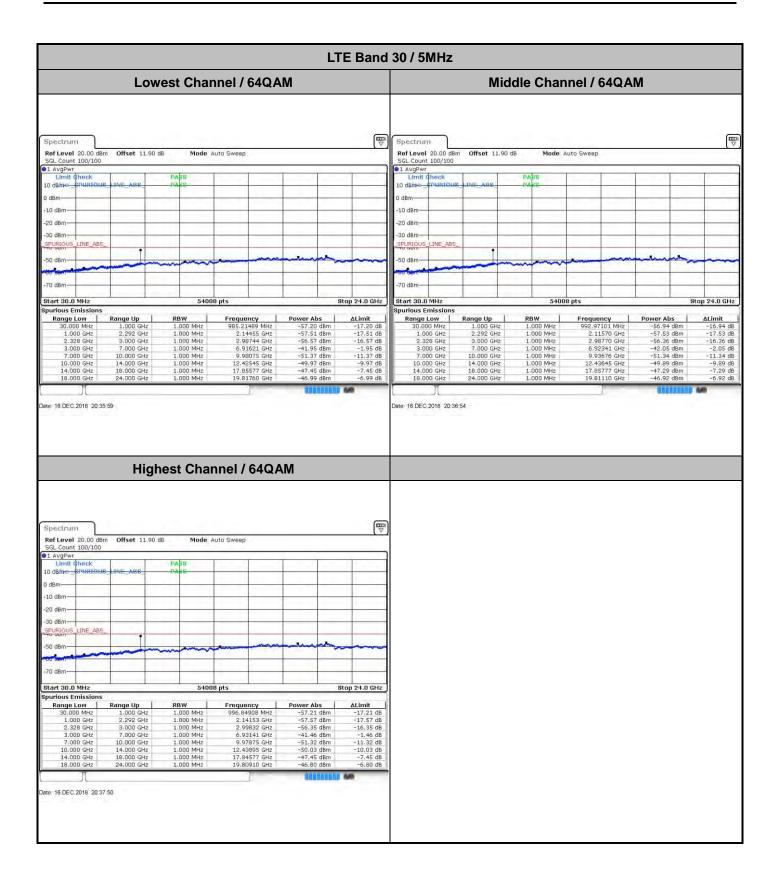
TEL: 886-3-327-3456 Page Number : A30-21 of 25 FAX: 886-3-328-4978

RADIO TEST REPORT Report No. :FG801751C



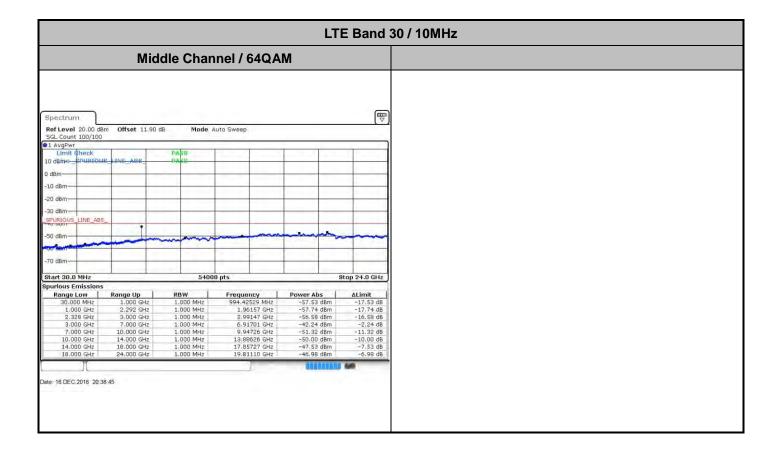
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C RADIO TEST REPORT Report No. :FG801751C



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Frequency Stability

Test Conditions		LTE Band 30 (QPSK) / Middle Channel	Limit	
Temperature	Voltage	BW 10MHz	Note 2.	
(°C)	(Volt)	Deviation (ppm)	Result	
50	Normal Voltage	0.0005		
40	Normal Voltage	0.0034		
30	Normal Voltage	0.0004		
20(Ref.)	Normal Voltage	0.0000		
10	Normal Voltage	0.0037		
0	Normal Voltage	0.0039	DACC	
-10	Normal Voltage	0.0077	PASS	
-20	Normal Voltage	0.0064		
-30	Normal Voltage	0.0038		
20	Maximum Voltage	0.0004		
20	Normal Voltage	0.0000		
20	Battery End Point	0.0019		

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Note:

- 1. Normal Voltage =9 V.; Battery End Point (BEP) =7.65 V.; Maximum Voltage =10.35 V.
- 2. The frequency fundamental emissions stay within the authorized frequency block.

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Appendix B. Test Results of EIRP and Radiated Test

EIRP

<Reporting Only>

LTE Band 30 / 5MHz (Average) (GT - LC = 2.4 dB)										
Channel	Mode	RB		Cond	ucted	EIRP				
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)			
Lowest	QPSK	1	0	21.44	0.1393	23.84	0.2421			
Middle		1	0	21.58	0.1439	23.98	0.2500			
Highest		1	0	21.48	0.1406	23.88	0.2443			
Lowest	16QAM	1	12	20.76	0.1191	23.16	0.2070			
Middle		1	12	20.91	0.1233	23.31	0.2143			
Highest		1	12	20.94	0.1242	23.34	0.2158			
Lowest	64QAM	1	0	19.74	0.0942	22.14	0.1637			
Middle		1	0	19.90	0.0977	22.30	0.1698			
Highest		1	0	19.82	0.0959	22.22	0.1667			
Limit	EIRP < 0.25W			Re	sult	PASS				

LTE Band 30 / 10MHz (Average) (GT - LC = 2.4 dB)										
Channel	Mode	RB		Cond	ucted	EIRP				
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)			
Lowest	QPSK	ı	-	-	-	ı	-			
Middle		1	0	21.58	0.1439	23.98	0.2500			
Highest		1	-	-	-	-	-			
Lowest		-	-	-	-	-	-			
Middle	16QAM	1	0	20.87	0.1222	23.27	0.2123			
Highest		-	-	-	-	-	-			
Lowest		-	-	-	-	-	-			
Middle	64QAM	1	49	19.80	0.0955	22.20	0.1660			
Highest		1	-	-	-	-	-			
Limit	EIRP < 0.25W			Re	sult	PASS				

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Radiated Spurious Emission

LTE Band 30

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LTE Band 30 / 5MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
	4608	-56.23	-40	-16.23	-78.87	-63.03	2.11	8.92	Н
	6912	-50.06	-40	-10.06	-77.16	-58.14	2.62	10.69	Н
	9216	-45.39	-40	-5.39	-75.96	-55.47	2.53	12.61	Н
Lowest									Н
Lowest	4608	-56.26	-40	-16.26	-78.91	-63.06	2.11	8.92	V
	6912	-50.47	-40	-10.47	-77.62	-58.55	2.62	10.69	V
	9216	-45.03	-40	-5.03	-76.04	-55.11	2.53	12.61	V
									V
	4614	-56.31	-40	-16.31	-78.96	-63.12	2.11	8.93	Н
	6924	-49.26	-40	-9.26	-76.4	-57.35	2.62	10.71	Н
	9234	-45.02	-40	-5.02	-75.7	-55.09	2.53	12.61	Н
N 40: -1 -11 -									Н
Middle	4614	-56.21	-40	-16.21	-78.9	-63.02	2.11	8.93	V
	6924	-49.95	-40	-9.95	-77.1	-58.04	2.62	10.71	V
	9234	-45.11	-40	-5.11	-76.13	-55.18	2.53	12.61	V
									V
	4620	-55.07	-40	-15.07	-77.81	-61.89	2.12	8.94	Н
Highest	6930	-50.18	-40	-10.18	-77.29	-58.28	2.61	10.72	Н
	9234	-45.36	-40	-5.36	-76.05	-55.43	2.53	12.61	Н
									Н
	4620	-55.82	-40	-15.82	-78.52	-62.64	2.12	8.94	V
	6930	-50.18	-40	-10.18	-77.45	-58.28	2.61	10.72	V
	9234	-44.93	-40	-4.93	-75.95	-55	2.53	12.61	V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

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LTE Band 30 / 10MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	4608	-55.84	-40	-15.84	-78.58	-62.64	2.11	8.92	Н
	6912	-50.31	-40	-10.31	-77.54	-58.39	2.62	10.69	Н
	9216	-45.49	-40	-5.49	-76.1	-55.57	2.53	12.61	Н
									Н
	4608	-56.21	-40	-16.21	-78.78	-63.01	2.11	8.92	V
	6912	-50.61	-40	-10.61	-77.71	-58.69	2.62	10.69	V
	9216	-45.09	-40	-5.09	-76.17	-55.17	2.53	12.61	V
									V

Report No.: FG8O1751C

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

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