

FCC RF Test Report

APPLICANT	:	Fibocom Wireless Inc.
EQUIPMENT	:	5G Module
BRAND NAME	:	Fibocom
MODEL NAME	:	FM350-GL
FCC ID	:	ZMOFM350GL
STANDARD	:	47 CFR Part 2, 27
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)

The product was received on May 18, 2020 and completely tested on Feb. 10, 2021. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.

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Reviewed by: Derreck Chen / Supervisor

File Shih

Approved by: Eric Shih / Manager



Sporton International (ShenZhen) Inc. 1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG051802J	Rev. 01	Initial issue of report	Apr. 02, 2021



Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.5	-	Peak-to-Average Ratio	<13dB	N/A	Reporting only
3.6	§27.50 (a)(3)	EIRP	EIRP < 250mW/5MHz	PASS	-
3.7	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.8	§2.1051 §27.53 (a)(4)	Conducted Band Edge Measurement	Refer standard	PASS	-
3.9	§2.1051 §27.53 (a)(4)	Conducted Spurious Emission	< 70+10log ₁₀ (P[Watts])	PASS	-
3.10	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within the band	PASS	-
4.4	§2.1053 §27.53 (a)(4)	Radiated Spurious Emission	< 70+10log ₁₀ (P[Watts])	PASS	Under limit 14.43 dB at 9223.200 MHz

SUMMARY OF TEST RESULT

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.



1 General Description

1.1 Applicant

Fibocom Wireless Inc.

1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.2 Manufacturer

Fibocom Wireless Inc.

1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.3 Product Feature of Equipment Under Test

Product Feature						
Equipment	5G Module					
Brand Name	Fibocom					
Model Name	FM350-GL					
FCC ID	ZMOFM350GL					
FUT evenente Dedice emplication	WCDMA/LTE/5G NR					
EUT supports Radios application	GNSS					
	Conducted: 862146050001310					
IMEI Code	Radiation: 882146050002276					
HW Version	V1.0.6					
SW Version	81600.0000.00.09.03.03					
EUT Stage	Identical Prototype					

1.4 Product Specification of Equipment Under Test

Product Feature						
Tx Frequency	5G NR n30 : 2305 MHz ~ 2315 MHz					
Rx Frequency 5G NR n30 : 2350 MHz ~ 2360 MHz						
Bandwidth 5MHz / 10MHz						
SCS	15KHz/30KHz					
NR Mode	SA					
Antenna Gain	1.0 dBi					
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM					



1.5 Modification of EUT

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

1.6 Maximum Conducted Power, Frequency Tolerance and Emission Designator

5G N	R n30 (SCS 15)	PI/2 BPS	K / QPSK	16QAM / 64QAM / 256QAM			
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Maximum Conducted power (W)	Emission Designator (99%OBW)	Maximum Conducted power (W)		
5	2307.5 ~ 2312.5	4M46G7D	0.1791	4M50W7D	0.1774		
10	2310.0	9M27G7D	0.1742	9M31W7D	0.1337		
Frequenc	y Tolerance (ppm)		0	.0021			

1.7 Testing Site

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for

Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International (Shenzhen) Inc.									
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595									
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.							
	TH01-SZ	CN1256	421272							
Test Firm	Sporton International (Sh	enzhen) Inc.								
Test Site Location			eng 4th Road, Fenghuang n City Guangdong Province							
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.							
	03CH03-SZ	CN1256	421272							



1.8 Test Software

ltem	Site	Manufacturer	Name	Version	
1.	03CH03-SZ	AUDIX	E3	6.2009-8-24	

1.9 Applied Standards

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

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

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Remark:

- **1.** All test items were verified and recorded according to the standards and without any deviation during the test.
- **2.** This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

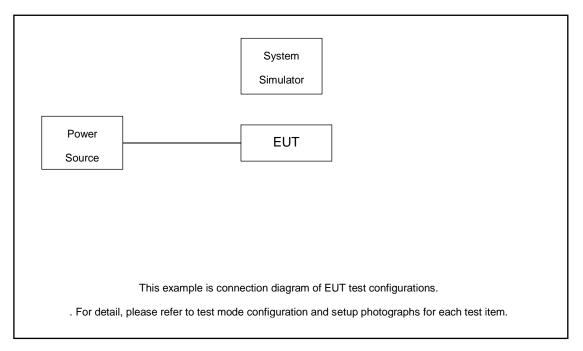
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Conducted	Band		Ban	dwid	lth (N	/IHz)			Modulation				RB #		Test Channel		
Test Cases		1.4	3	5	10	15	20	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Full	L	м	н
Max. Output	n30	-	-	v		-	-	v	v	v	v	v	v	v	v	v	v
Power	1150	-	-		v	-	-	v	v	v	v	v	v	v		v	
Peak-to-Average Ratio	n30	-	-	v		I	-	v	v				v	v	v	v	v
E.I.R.P	n30	-	-	v		-	-	v	v	v	v	v	v		v	v	v
E.I.K.F	1150	I	-		v	-	-	v	v	v	v	v	v			v	
26dB and 99%	n30	-	-	v		-	-		v	v	v	v		v		v	
Bandwidth	1130	-	-		v	-	-		v	v	v	v		v		v	
Conducted Band	" 20	-	-	v		-	-	v	v	V	v	v	v	v	v		v
Edge	n30	-	-		v	-	-	v	v	V	v	v	v	v	v		v
Conducted		-	-	v		-	-	v	v				v		v	v	v
Spurious Emission	n30	-	-		v	-	-	v	v				v			v	
Frequency Stability	n30	-	-		v	-	-		v					v		v	
Radiated																	
Spurious	n30							v	Vorst Ca	ase						v	
Emission																	
Note	2. T 3. T te 4. 50	he ma he de est un missic G NR 5KHz	ark "- vice der c ons a sup (the	" me is in differe are re ports high	ans f vestig ent R eporte SCS est c	that t gated B siz ed. S 15k	his b I fron ze/off (Hz a ucted	andwidt n 30MH: set and and 30K power)	h is not z to 10 t modula Hz, acco perform	chosen fo supported imes of fu tions in ex ording to e for all tes rst modula	I. ndamenta ploratory engineerir	test. Subs	sequ ion,	ently, only c	only t	he worst the SC	t case

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.



2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

ltem	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	Base Station	Keysight	UXM E7515B	N/A	N/A	Unshielded, 1.5 m
3.	Test jig	N/A	N/A	N/A	N/A	N/A

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 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.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 4.4 dB.

Example :

Offset(dB) = RF cable loss(dB).

= 4.4 (dB)



2.5 Frequency List of Low/Middle/High Channels

5G NR n30 Channel and Frequency List									
BW [MHz]	[MHz] Channel/Frequency(MHz) Lowest Middle Highest								
10	Channel	-	462000	-					
10	Frequency	-	2310	-					
5	Channel	461500	462000	462500					
	Frequency	2307.5	2310	2312.5					



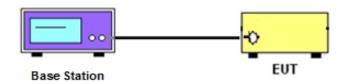
3 Conducted Test Items

3.1 Measuring Instruments

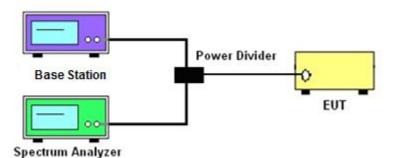
See list of measuring instruments of this test report.

3.2 Test Setup

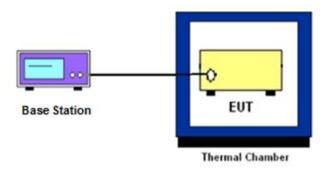
3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.



3.4 Conducted Output Power Measurement

3.4.1 Description of the Conducted Output Power 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.

3.4.2 Test Procedures

- 1. The testing follows ANSI C63.26 Section 5.2
- 2. The transmitter output port was connected to the system simulator.
- 3. Set EUT at maximum power through the system simulator.
- 4. Select lowest, middle, and highest channels for each band and different modulation.
- 5. Measure and record the power level from the system simulator.



3.5 Peak-to-Average Ratio

3.5.1 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.

3.5.2 Test Procedures

- 1. The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).
- 2. The EUT was connected to spectrum and system simulator via a power divider.
- 3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- 4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
- 5. Record the deviation as Peak to Average Ratio.



3.6 EIRP

3.6.1 Description of EIRP

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.

3.6.2 Test Procedures

- 1. According to KDB 412172 D01 Power Approach,
- 2. EIRP = P_T + G_T L_C , ERP = EIRP -2.15, 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



3.7 Occupied Bandwidth

3.7.1 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.

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.

3.7.2 Test Procedures

- 1. The testing follows ANSI C63.26 Section 5.4
- 2. 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.
- 4. 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.
- 5. Set the detection mode to peak, and the trace mode to max hold.
- 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)
- 7. Determine the "-26 dB down amplitude" as equal to (Reference Value X).
- 8. 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.
- 9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



3.8 Conducted Band Edge Measurement

3.8.1 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 2328 MHz and 2328 and 2328 and 2337 MHz;

(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.

3.8.2 Test Procedures

- 1. The testing follows ANSI C63.26 section 5.7
- 2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
- 3. The band edges of low and high channels for the highest RF powers were measured.
- 4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
- 5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
- 6. Set spectrum analyzer with RMS detector.
- 7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 8. Checked that all the results comply with the emission limit line.

Example:

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

= P(W)- [43 + 10log(P)] (dB)

 $= [30 + 10\log(P)] (dBm) - [43 + 10\log(P)] (dB) = -13dBm.$



3.9 Conducted Spurious Emission Measurement

3.9.1 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 $70 + 10 \log (P) dB$.

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

3.9.2 Test Procedures

- 1. The testing follows ANSI C63.26 section 5.7
- 2. 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.
- 4. The middle channel for the highest RF power within the transmitting frequency was measured.
- 5. The conducted spurious emission for the whole frequency range was taken.
- 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
- 7. Set spectrum analyzer with RMS detector.
- 8. Taking the record of maximum spurious emission.
- 9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 10. 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



3.10 Frequency Stability Measurement

3.10.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency.

3.10.2 Test Procedures for Temperature Variation

- 1. The testing follows ANSI C63.26 section 5.6.4
- 2. The EUT was set up in the thermal chamber and connected with the system simulator.
- 3. 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.
- 4. 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.

3.10.3 Test Procedures for Voltage Variation

- 1. The testing follows ANSI C63.26 section 5.6.5.
- 2. The EUT was placed in a temperature chamber at 20±5°C and connected with the system simulator.
- 3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
- 4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
- 5. The variation in frequency was measured for the worst case.



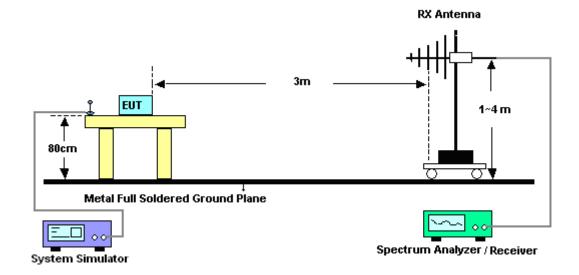
4 Radiated Test Items

4.1 Measuring Instruments

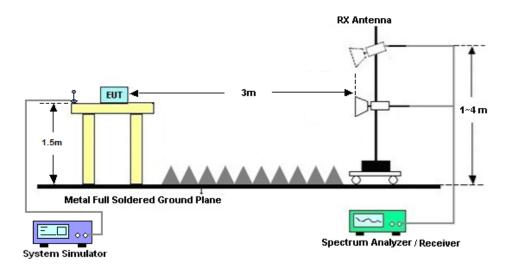
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Sporton International (ShenZhen) Inc. TEL : 86-755-8637-9589 FAX : 86-755-8637-9595 FCC ID : ZMOFM350GL



4.4 Radiated Spurious Emission Measurement

4.4.1 Description of Radiated Spurious Emission

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.

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

4.4.2 Test Procedures

- 1. The testing follows ANSI C63.26 Section 5.5
- 2. 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.
- 3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
- 4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
- 5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
- 6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
- 7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
- 8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
- 9. 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

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

The limit line is derived from $70 + 10\log(P)dB$ below the transmitter power P(Watts) = P(W)- [70 + 10log(P)] (dB)

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

= -40dBm.



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 17, 2020	Jan. 13, 2021~ Feb. 10, 2021	Apr. 16, 2021	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangrou p	LP-150U	H201408180 3	-40~+150°C	Jul. 22, 2020	Jan. 13, 2021~ Feb. 10, 2021	Jul. 21, 2021	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY5445008 3	20Hz~8.4GHz	Apr. 17, 2020	Jan. 27, 2021	Apr. 16, 2021	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY5515024 6	10Hz~44GHz;	Apr. 17, 2020	Jan. 27, 2021	Apr. 16, 2021	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Jun. 22, 2020	Jan. 27, 2021	Jun. 21, 2021	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBE CK	BBHA9120 D	9120D-1355	1GHz~18GHz	Apr. 30, 2020	Jan. 27, 2021	Apr. 29, 2021	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 17, 2020	Jan. 27, 2021	Oct. 16, 2021	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 21, 2020	Jan. 27, 2021	Jul. 20, 2021	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 23, 2020	Jan. 27, 2021	Apr. 22, 2021	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY3950130 2	500MHz~26.5G Hz	Dec. 25, 2020	Jan. 27, 2021	Dec. 24, 2021	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	6160100019 85	N/A	NCR	Jan. 27, 2021	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jan. 27, 2021	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jan. 27, 2021	NCR	Radiation (03CH03-SZ)

NCR: No Calibration Required



6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Confidence of 95% (U = 2Uc(y))

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.6dB
--	-------

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

Measuring Uncertainty for a Level of	3.8dB
Confidence of 95% (U = 2Uc(y))	3.0UD



Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) and EIRP

				SCS 15								
	SA n30 (ANT M) 10MHz (GT - LC = 1 dB)											
			NR RB	Cond	ucted	EIRI	P					
Channel	Mode	Size	Offset	Power (dBm/5MHz)	Power (W/5MHz)	EIRP (dBm/5MHz)	EIRP (W/5MHz)					
		1	1	22.10	0.1622	23.10	0.2042					
	PI/2 BPSK	1	50	22.41	0.1742	23.41	0.2193					
	DFT-s-OFDM	25	12	22.24	0.1675	23.24	0.2109					
	QPSK DFT-s-OFDM	1	1	21.94	0.1563	22.94	0.1968					
		1	50	22.26	0.1683	23.26	0.2118					
		25	12	22.27	0.1687	23.27	0.2123					
	16QAM DFT-s-OFDM	1	1	21.16	0.1306	22.16	0.1644					
Middle		1	50	21.22	0.1324	22.22	0.1667					
		25	12	21.26	0.1337	22.26	0.1683					
		1	1	20.12	0.1028	21.12	0.1294					
	64QAM	1	50	20.16	0.1038	21.16	0.1306					
	DFT-s-OFDM	25	12	20.23	0.1054	21.23	0.1327					
		1	1	17.36	0.0545	18.36	0.0685					
	256QAM	1	50	17.41	0.0551	18.41	0.0693					
	DFT-s-OFDM	25	12	17.39	0.0548	18.39	0.069					

	SCS 15											
		ļ	SA n30 (/	ANT) 5MHz (GT - I	LC = 1 dB)							
			NR	Cond	ucted	EIRI	5					
Channel	Mode		RB	Cond								
	mode	Size	Offset	Power (dBm/5MHz)	Power (W/5MHz)	EIRP (dBm/5MHz)	EIRP (W/5MHz)					
		1	1	22.24	0.1675	23.24	0.2109					
	PI/2 BPSK	1	23	22.53	0.1791	23.53	0.2254					
	DFT-s-OFDM	12	6	22.32	0.1706	23.32	0.2148					
	QPSK DFT-s-OFDM	1	1	22.20	0.166	23.20	0.2089					
		1	23	22.37	0.1726	23.37	0.2173					
		12	6	22.31	0.1702	23.31	0.2143					
	16QAM DFT-s-OFDM	1	1	21.38	0.1374	22.38	0.173					
Lowest		1	23	21.43	0.139	22.43	0.175					
		12	6	21.42	0.1387	22.42	0.1746					
		1	1	20.15	0.1035	21.15	0.1303					
	64QAM	1	23	20.21	0.105	21.21	0.1321					
	DFT-s-OFDM	12	6	20.26	0.1062	21.26	0.1337					
		1	1	17.65	0.0582	18.65	0.0733					
	256QAM	1	23	17.61	0.0577	18.61	0.0726					
	DFT-s-OFDM	12	6	17.66	0.0583	18.66	0.0735					
Middle		1	1	22.27	0.1687	23.27	0.2123					

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	PI/2 BPSK	1	23	22.45	0.1758	23.45	0.2213
	DFT-s-OFDM	12	6	22.43	0.175	23.43	0.2203
		1	1	22.23	0.1671	23.23	0.2104
	QPSK	1	23	22.37	0.1726	23.37	0.2173
	DFT-s-OFDM	12	6	22.41	0.1742	23.41	0.2193
		1	1	21.41	0.1384	22.41	0.1742
	16QAM	1	23	21.40	0.138	22.40	0.1738
	DFT-s-OFDM	12	6	21.52	0.1419	22.52	0.1786
		1	1	20.22	0.1052	21.22	0.1324
	64QAM	1	23	20.02	0.1005	21.02	0.1265
	DFT-s-OFDM	12	6	20.05	0.1012	21.05	0.1274
		1	1	17.88	0.0614	18.88	0.0773
	256QAM	1	23	17.92	0.0619	18.92	0.078
DFT-s-OFD	DFT-s-OFDM	12	6	17.76	0.0597	18.76	0.0752
		1	1	21.03	0.1268	22.03	0.1596
	QPSK CP-s-OFDM	1	23	21.13	0.1297	22.13	0.1633
		13	6	21.22	0.1324	22.22	0.1667
	PI/2 BPSK DFT-s-OFDM	1	1	22.52	0.1786	23.52	0.2249
		1	23	22.53	0.1791	23.53	0.2254
		12	6	22.41	0.1742	23.41	0.2193
	QPSK	1	1	22.39	0.1734	23.39	0.2183
		1	23	22.36	0.1722	23.36	0.2168
	DFT-s-OFDM	12	6	22.49	0.1774	23.49	0.2234
		1	1	21.35	0.1365	22.35	0.1718
Highest	16QAM	1	23	21.23	0.1327	22.23	0.1671
	DFT-s-OFDM	12	6	21.41	0.1384	22.41	0.1742
-		1	1	20.21	0.105	21.21	0.1321
	64QAM	1	23	20.13	0.103	21.13	0.1297
	DFT-s-OFDM	12	6	20.09	0.1021	21.09	0.1285
		1	1	18.06	0.064	19.06	0.0805
	256QAM	1	23	17.63	0.0579	18.63	0.0729
	DFT-s-OFDM	12	6	17.71	0.059	18.71	0.0743

EIRP Limit	EIRP Result
< 250mW/5MHz	PASS

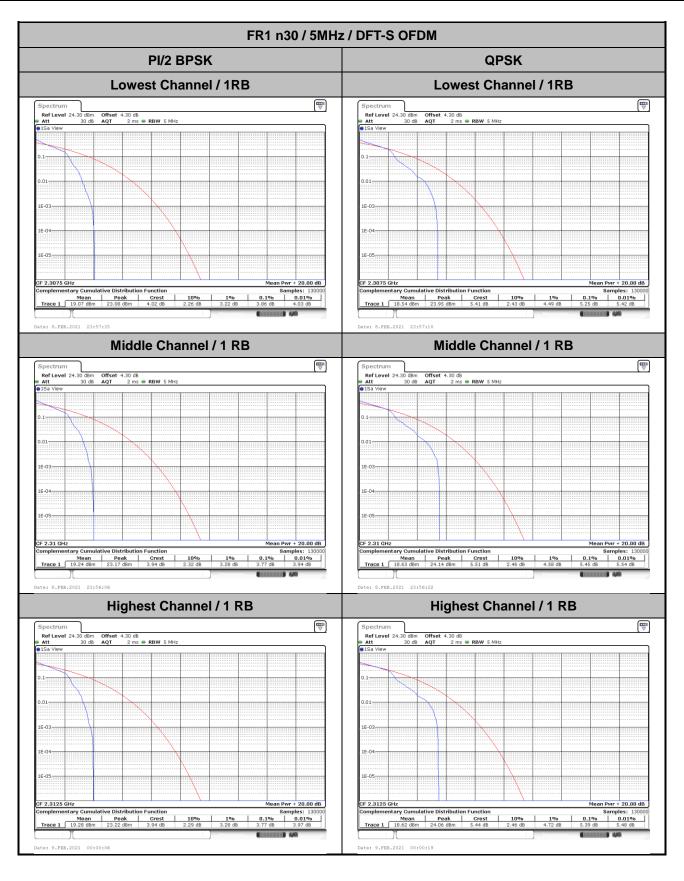


FR1 n30

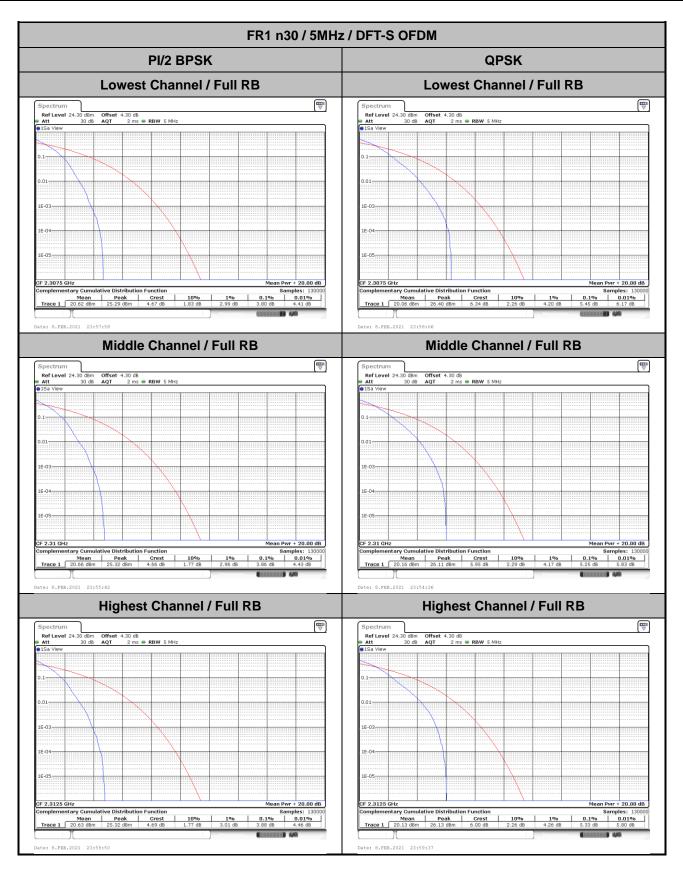
Peak-to-Average Ratio

Mode		FR1 n30 / 5MHz / DFT-S OFDM					
Mod.	PI/2 BPSK	PI/2 BPSK	QPSK	QPSK	Limit: 13dB		
RB Size	1RB	Full RB	1RB	Full RB	Result		
Lowest CH	3.86	3.80	5.25	5.45			
Middle CH	3.77	3.86	5.45	5.25	PASS		
Highest CH	3.77	3.88	5.39	5.33			









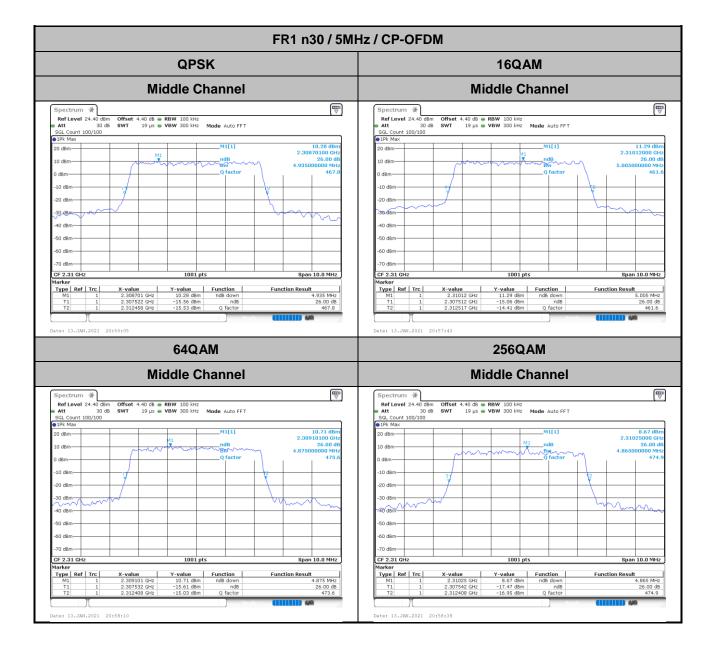


26dB Bandwidth

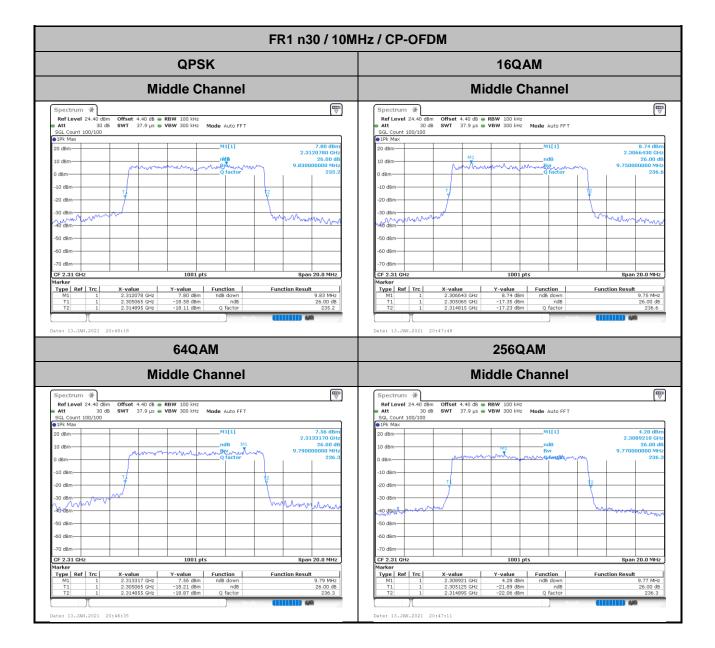
Mode			FR1 n	30 : 26dB BV	V(MHz) / CP-	OFDM	
BW	5MHz	5MHz	5MHz	5MHz			
Mod.	QPSK	16QAM	64QAM	256QAM			
Middle CH	4.93	5.00	4.88	4.87			

Mode			FR1 n	30 : 26dB BV	V(MHz) / CP-	OFDM	
BW	10MHz	10MHz	10MHz	10MHz			
Mod.	QPSK	16QAM	64QAM	256QAM			
Middle CH	9.83	9.75	9.79	9.77			









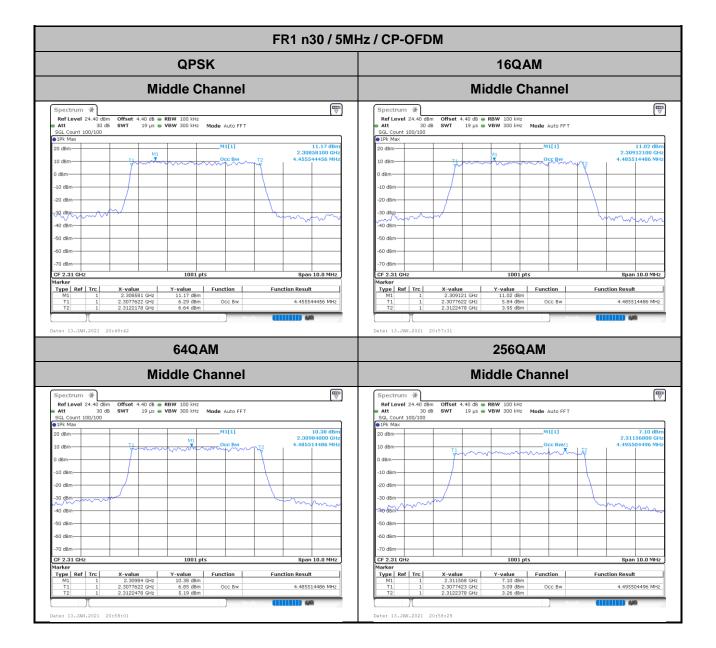


Occupied Bandwidth

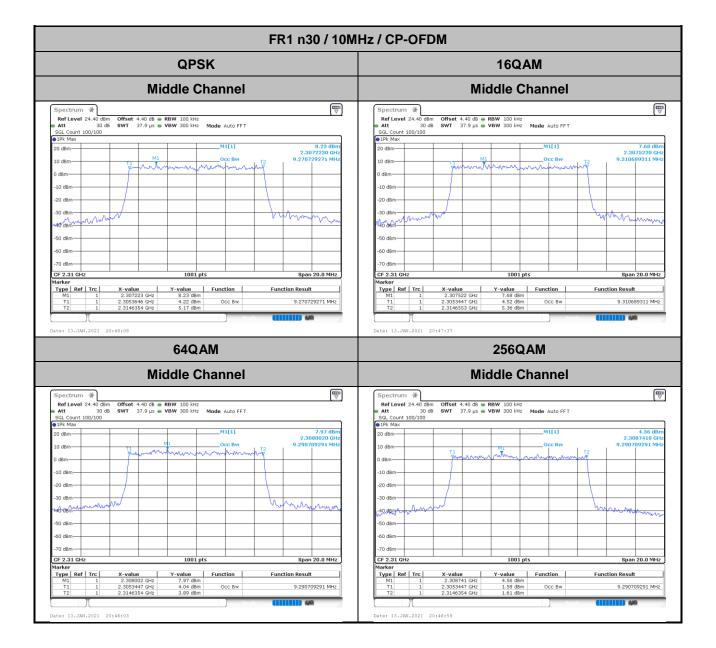
Mode			FR1	n30 : OBW(MHz) / CP-O	FDM	
BW	5MHz	5MHz	5MHz	5MHz			
Mod.	QPSK	16QAM	64QAM	256QAM			
Middle CH	4.46	4.49	4.49	4.50			

Mode	FR1 n30 : OBW(MHz) / CP-OFDM								
BW	10MHz	10MHz 10MHz 10MHz 10MHz 10MHz							
Mod.	QPSK	16QAM	64QAM	256QAM					
Middle CH	9.27	9.31	9.29	9.29					











Conducted Band Edge

FR1 n30 / 5MHz / DFT-S OFDM BPSK						
Lowest Band Edge / 1 RB	Channel Power < -13dBm Pass					
Spectrum Image: Spectrum Ref Level 22.20 dbm Offset 4.30 db Mode Auto Sweep SGL Count 100/100 1 Avgbrd 1 avgbrd Imit Chieck PABS 10 dbm PABS 10 dbm PABS -10 dbm PABS						
Lowest Band Edge / Full RB	Channel Power < -13dBm Pass					
Spectrum Difest 4.30 db Mode Auto Sweet 64 Coupt of the spectrum 1000000000000000000000000000000000000	1					



FR1 n30 / 5MHz / DFT-S OFDM BPSK						
Highest Band Edge	/ 1 RB	Channel Power < -13dBm Pass				
Spectrum Ref Level 22.20 dBm Offset 4.30 dB Mode Auto Sweep SGL Count 100/100 I AvgPwr Unit threck PASS 10 dBm PASS 0 dBm -20 dBm -20 dBm -40						
-50 dBm						
-00 UBIII		1				
Start 2.292 GHz 9009 pts Spurious Emissions	Stop 2.328 GHz					
2.296 GHz 2.300 GHz 1.000 MHz 2.297 2.300 GHz 2.309 GHz 1.000 MHz 2.309 2.309 GHz 2.309 GHz 1.000 MHz 2.309 2.309 GHz 2.310 GHz 5.000 KHz 2.310 2.310 GHz 2.315 GHz 50.000 KHz 2.314 2.315 GHz 2.316 GHz 50.000 KHz 2.315 2.315 GHz 2.316 GHz 2.316 GHz 2.312 2.316 GHz 2.320 GHz 1.000 MHz 2.316 2.316 GHz 2.320 GHz 1.000 MHz 2.316 2.320 GHz 2.320 GHz 1.000 MHz 2.320	yy Power Abs ∆Limit 00 GHz -48.29 dBm -17.29 dB 77 GHz -46.19 dBm -21.19 dB 09 GHz -93.34 dBm -26.34 dB 10 GHz -48.63 dBm -35.63 dB 10 GHz -20.47 dBm -7.47 dB 31 GHz -26.76 dBm -11.53 dB 21 GHz -41.53 dBm -15.53 dB 11 GHz -46.43 dBm -15.43 dB					
Highest Band Edge /	Full RB	Channel Power < -13dBm Pass				
0 dBm -10 dBm -20 dBm -20 dBm -20 dBm -50 dBm -50 dBm -50 dBm -50 dBm -70 d	29 GHz -53.65 dBm -22.65 dB 30 GHz -49.37 dBm -24.37 dB 33 GHz -28.82 dBm -15.82 dB 39 GHz -32.18 dBm -19.18 dB	1				
2.310 GHz 2.315 GHz 100.000 kHz 2.313 2.315 GHz 2.316 GHz 50.000 kHz 2.315 2.316 GHz 2.320 GHz 1.000 MHz 2.317 2.320 GHz 2.324 GHz 1.000 MHz 2.320	9 GHz22.16 OBIN23.75 GB 9 GHz23.75 GB 11 GHz33.90 GBm20.90 GB 11 GHz39.44 GBm16.44 GB 15 GHz36.73 GBm11.73 GB 17 GHz51.53 GBm -20.53 GB					



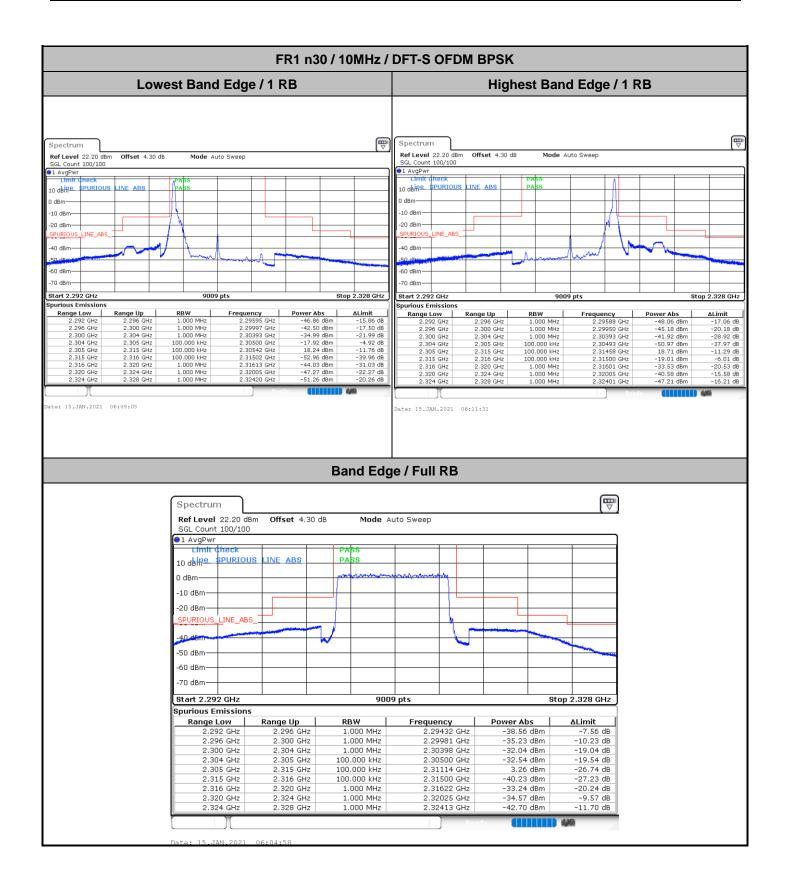
FR1 n30 / 5MHz / DFT-S OFDM QPSK						
Lowest Band Edge / 1 RB		Channel Power < -13dBm Pass				
Spectrum Ref Level 22.20 dBm Offset 4.30 dB Mode Auto Sweep SGL Count 100/100 Image: Solution of the second						
-60 dBm		1				
Start 2.292 GHz 9009 pts Spurious Emissions	Stop 2.328 GHz					
Range Low Range Up RBW Frequency P 2.292 GHz 2.296 GHz 1.000 MHz 2.29585 GHz P 2.296 GHz 2.300 GHz 1.000 MHz 2.29987 GHz P 2.300 GHz 2.300 GHz 1.000 MHz 2.29987 GHz P 2.300 GHz 2.300 GHz 2.304 GHz 2.304 GHz 2.3038 GHz P 2.305 GHz 2.301 GHz 2.301 GHz 2.3038 GHz 2.3038 GHz P 2.310 GHz 2.310 GHz 2.310 GHz 2.3000 KHz 2.3110 GHz P 2.310 GHz 2.324 GHz 1.000 MHz 2.3200 GHz 2.3200 GHz P 2.324 GHz 2.324 GHz 1.000 MHz 2.3200 GHz P P P 2.324 GHz 2.328 GHz 1.000 MHz 2.3240 GHz P P P 2.324 GHz 2.328 GHz 1.000 MHz 2.3249 GHz P P P 2.324 GHz 2.324 GHz 1.000 MHz 2.3249 GHz P P P P	were Abs ALimit -50.77 dB -19.77 dB -45.40 dBm -20.40 dB -36.37 dBm -23.37 dB -22.41 dBm -9.41 dB 17.92 dBm -19.43 dB -50.43 dBm -37.43 dB -41.97 dBm -28.97 dB -52.09 dBm -27.09 dB -54.05 dBm -27.09 dB					
Lowest Band Edge / Full R	В	Channel Power < -13dBm Pass				
2.292 GHz 2.296 GHz 1.000 MHz 2.29597 GHz	Stop 2.328 GHz 48.00 dBm	ſ				
2.292 GHz 2.300 GHz 1.000 MHz 2.29999 GHz 2.300 GHz 2.300 GHz 1.000 MHz 2.29999 GHz 2.300 GHz 2.300 GHz 1.000 MHz 2.30394 GHz 2.30394 GHz 2.305 GHz 50.000 KHz 2.30791 GHz 2.310 GHz 2.310 GHz 100.000 KHz 2.31001 GHz 2.310 GHz 2.310 GHz 1.000 MHz 2.3110 GHz 2.311 GHz 2.320 GHz 1.000 MHz 2.31137 GHz 2.320 GHz 1.000 MHz 2.32099 GHz 2.324 GHz 1.000 MHz 2.32209 GHz 2.324 GHz 1.000 MHz 2.3224 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 1.300 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 1.300 MHz 2.32445 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 1.300 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 2.328 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 2.328 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 2.324 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 2.324 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 2.324 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 2.324 GHz 2.324 GHz 1.000 MHz 2.324 GHz 2.324 GHz 2.324 GHz 2.324 GHz 1.000 MHz 2.324 GHz 2.324 GHz 2.324 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz 2.324 GHz 2.324 GHz 2.324 GHz 2.324 GHz 1.000 MHz 2.32445 GHz 2.324 GHz	-10.63 dB -29.46 dBm -10.63 dB -29.46 dBm -21.61 dB 5.42 dBm -21.61 dB 5.42 dBm -24.58 dB -33.90 dBm -17.58 dB -49.47 dBm -24.47 dB -54.04 dBm -23.04 dB					



	FR1 n30 / 5MHz / DFT-S OFDM QPSK						
Higl	hest Band Edge / 1 F	RB	Channel Power < -13dBm Pass				
Spectrum Ref Level 22.20 dBm Offset 4.30 d SGL Count 100/100	dB Mode Auto Sweep	(mi ⊽					
1 AvgPwr Limit Uneck 10 dbm 20 dbm -10 dbm -20 dbm	PASS PASS		1				
Start 2.292 GHz Spurious Emissions	9009 pts	Stop 2.328 GHz					
Range Low Range Up 2.292 GHz 2.296 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.310 GHz 2.316 GHz 2.310 GHz 2.316 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.320 GHz 2.320 GHz 2.324 GHz 2.324 GHz 2.328 GHz Date: 15.JAN.2021 05:44:04	RBW Frequency 1.000 MHz 2.29475 GHz 1.000 MHz 2.29992 GHz 1.000 MHz 2.30986 GHz 50.000 Hz 2.30989 GHz 1.000 MHz 2.30990 GHz 50.000 Hz 2.31490 GHz 50.000 Hz 2.31500 GHz 1.000 MHz 2.31607 GHz 1.000 MHz 2.32031 GHz 1.000 MHz 2.32031 GHz 1.000 MHz 2.32046 GHz	Power Abs ΔLimit -46.85 dBm -15.85 dB -44.87 dBm -10.87 dB -38.53 dBm -25.53 dB -48.53 dBm -25.53 dB 18.38 dBm -11.62 dB -19.66 dBm -66 dB -27.97 dBm -14.97 dB -41.44 dBm -16.44 dB -46.13 dBm -15.19 dB					
Highe	est Band Edge / Full	RB	Channel Power < -13dBm Pass				
Spectrum Ref Level 22.20 dBm GGL Count 100/100 Ø1 AvgPwr	38 Mode Auto Sweep	(\vec{w})					
Umit direck 10 dbm BPURIOUS INE ABS 0 dbm	PABS		,				
-70 dBm	9009 pts	Stop 2.328 GHz	1				
Spurious Emissions Ronge Low Ronge Up 2.296 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.300 GHz 2.315 GHz 2.316 GHz 2.315 GHz 2.316 GHz 2.320 GHz 2.320 GHz 2.320 GHz 2.320 GHz 2.320 GHz 2.324 GHz 2.322 GHz 2.328 GHz Date: 15.JAN.2021 05:42:47	RBW Frequency 1.000 MHz 2.29590 GHz 1.000 MHz 2.39990 GHz 1.000 MHz 2.30900 GHz 50.000 KHz 2.31000 GHz 100.000 KHz 2.31141 GHz 1.000 MHz 2.31501 GHz 1.000 MHz 2.31501 GHz 1.000 MHz 2.32008 GHz 1.000 MHz 2.32423 GHz	Power Abs ΔLimit -53.90 dBm -22.90 dB -49.00 dBm -24.00 dB -28.55 dBm -15.56 dB -32.55 dBm -15.56 dB -32.05 dBm -15.56 dB -33.76 dBm -20.76 dB -33.76 dBm -20.76 dB -37.20 dBm -12.20 dB -51.39 dBm -20.39 dB					

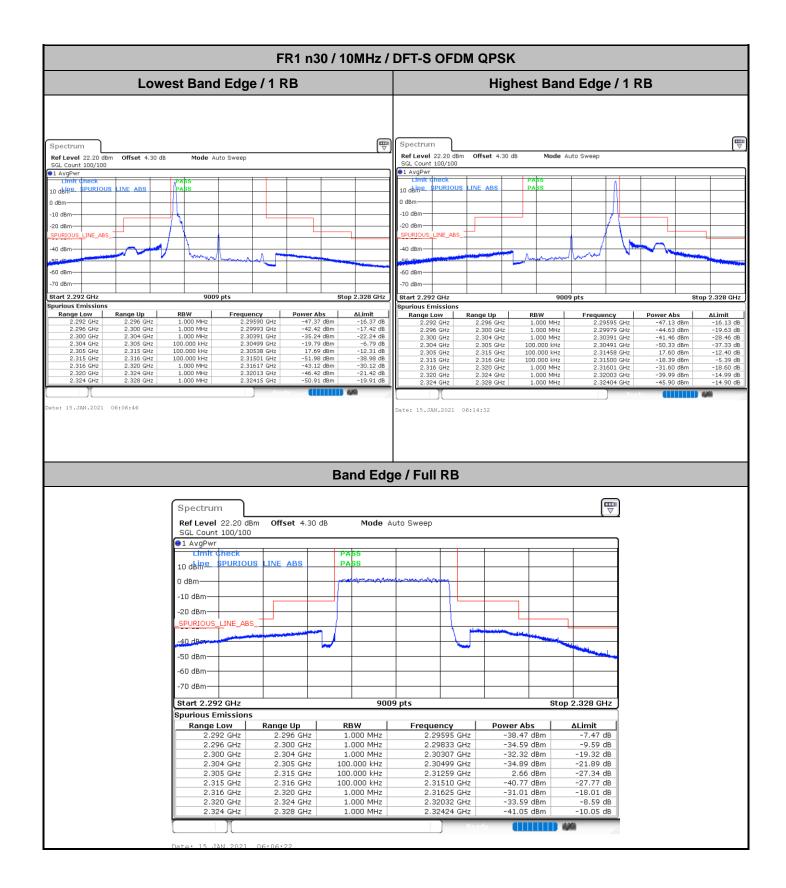








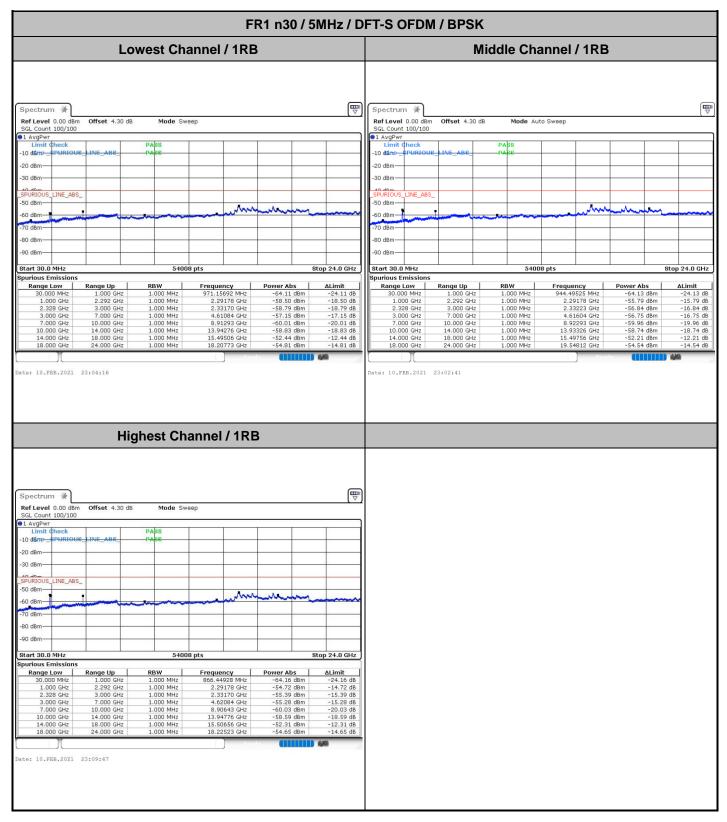




Sporton International (ShenZhen) Inc. TEL : 86-755-8637-9589 FAX : 86-755-8637-9595 FCC ID : ZMOFM350GL



Conducted Spurious Emission

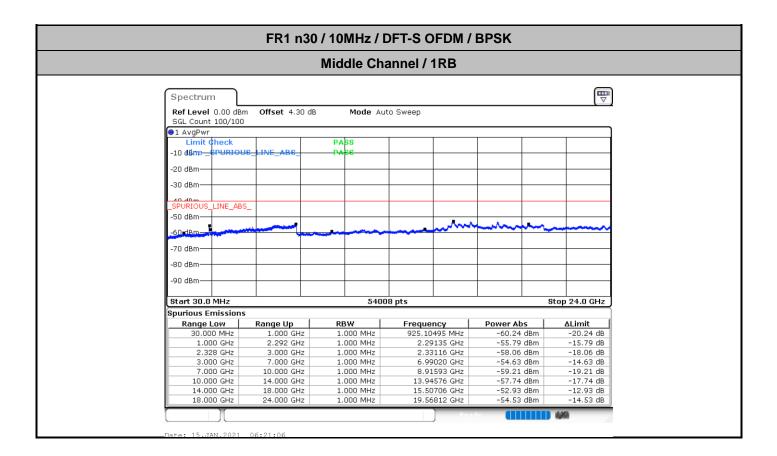


Sporton International (ShenZhen) Inc. TEL : 86-755-8637-9589 FAX : 86-755-8637-9595 FCC ID : ZMOFM350GL

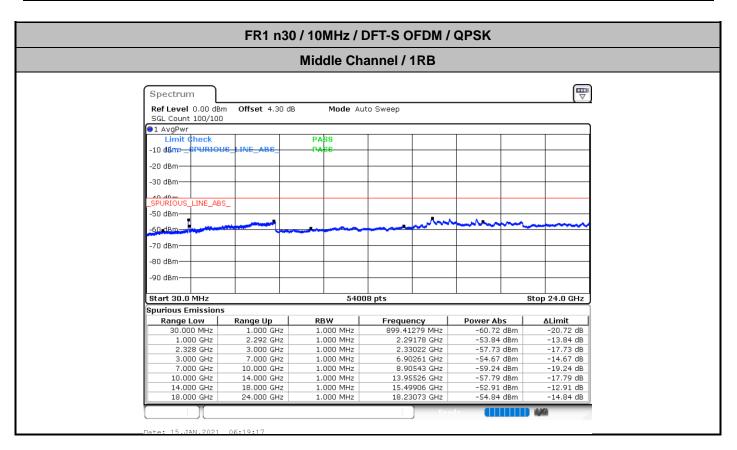


	Lowest Channel / 1RB						Middle Channel / 1RB						
Spectrum 🔆						Spectrum 🔆					Ę		
Ref Level 0.00 dBm SGL Count 100/100	Offset 4.30 dB	Mode Swe	еер		(▽)	Ref Level 0.00 dBr SGL Count 100/100		Mode Auto) Sweep				
1 AvgPwr Limit ¢heck		PASS			1	AvgPwr Limit ¢heck		PABS					
10 d <mark>8me</mark>	LINE_AB6_	PASS				-10 dBme	E_LINE_ABE_	PASS					
30 dBm						-30 dBm							
SPURIOUS_LINE_ABS_						_SPURIOUS_LINE_ABS	s						
50 dBm	-		menting	men		-60 dBm				heren			
70 dBm						-70 dBm -80 dBm							
90 dBm						-90 dBm							
tart 30.0 MHz purious Emissions		54008			top 24.0 GHz	Start 30.0 MHz Spurious Emissions		54008			top 24.0 G		
Range Low 30.000 MHz 1.000 GHz	Range Up 1.000 GHz 2.292 GHz	RBW 1.000 MHz 1.000 MHz	Frequency 892.62619 MHz 2.29006 GHz	-64.35 dBm -51.22 dBm	ΔLimit -24.35 dB -11.22 dB	Range Low 30.000 MHz 1.000 GHz	Range Up 1.000 GHz 2.292 GHz	RBW 1.000 MHz 1.000 MHz	Frequency 910.56222 MHz 2.29178 GHz	-64.05 dBm -57.40 dBm	△Limit -24.05 d -17.40 d		
2.328 GHz 3.000 GHz	3.000 GHz 7.000 GHz	1.000 MHz 1.000 MHz	2.33196 GHz 4.61084 GHz	-57.71 dBm -56.87 dBm	-17.71 dB -16.87 dB	2.328 GHz 3.000 GHz	3.000 GHz 7.000 GHz	1.000 MHz 1.000 MHz	2.32847 GHz 4.61604 GHz	-58.31 dBm -56.40 dBm	-18.31 d		
7.000 GHz 10.000 GHz 14.000 GHz	10.000 GHz 14.000 GHz 18.000 GHz	1.000 MHz 1.000 MHz 1.000 MHz	8.91193 GHz 13.91226 GHz 15.50506 GHz	-60.15 dBm -58.89 dBm -52.29 dBm	-20.15 dB -18.89 dB -12.29 dB	7.000 GHz 10.000 GHz 14.000 GHz	10.000 GHz 14.000 GHz 18.000 GHz	1.000 MHz 1.000 MHz 1.000 MHz	8.92843 GHz 13.97875 GHz 15.49756 GHz	-59.88 dBm -58.83 dBm -52.32 dBm	-19.88 c -18.83 c -12.32 c		
18.000 GHz	24.000 GHz	1.000 MHz	18.22323 GHz	-54.72 dBm	-14.72 dB	18.000 GHz	24.000 GHz	1.000 MHz	18.23623 GHz	-54.78 dBm	-14.78 d		
:e: 10.FEB.2021 2			annel / 1PP			Date: 10.FEB.2021	23:00:34				-		
te: 10.FEB.2021 2		Jhest Cha	annel / 1RB			Date: 10.FEB.2021	23:00:34				-		
Te: 10.FEB.2021 2		hest Cha	annel / 1RB		44	Date: 10.FEB.2021	23:00:34						
		hest Cha	annel / 1RB			Date: 10.FEB.2021	23:00:34						
Spectrum 🖌		hest Cha			(TTT)	Date: 10.FEB.2021	23:00:34				-		
Spectrum 🖌 Ref Level 0.00 dBm SGL Count 100/100 1 AvgPwr	Hig	Mode Swe				Date: 10.FEB.2021	23:00:34						
Spectrum tef Level 0.00 dBm SGL Count 100/100 1 AvgBwr Limit dheck 10 dBmp_rVRIOUS;	Offset 4.30 dB					Date: 10.FEB.2021	23:00:34				_		
Spectrum * Ref Level 0.00 dBm GL. Count 100/100 1 AvgPwr Limit Gheck 10 dBm-sruntoue, 20 dBm-	Offset 4.30 dB	Mode Swe				Date: 10.FEB.2021	23:00:34						
pectrum * Lief Level 0.00 dBm L AvgPwr Limit Check. 0 dBm - 0 dBm - 0 dBm - 0 dBm - 0 dBm -	Offset 4.30 dB	Mode Swe	eep 			Date: 10.FEB.2021	23:00:34				_		
Spectrum Ref Level 0.00 dBm SGL Count 100/100 1 AvgPerr Limit Check 10 dBm 20 dBm 50 dBm 50 dBm 50 dBm	Offset 4.30 dB	Mode Swe	eep 		(The second seco	Date: 10.FEB.2021	23:00:34						
Spectrum * Ref Level 0.00 dBm SGL Count 100/100 I AvgPwr Limit Check 10 dBm SPURIOUS LINE_ABS_ 50 dBm 50 dBm 70 dBm	Offset 4.30 dB	Mode Swe	eep 			Date: 10.FEB.2021	23:00:34				-		
Spectrum * tef Level 0.00 dBm SGL Count 100/100 Limit Check 10 dBm PURIOUS_EINE_ABS_ 00 dBm 50 dBm	Offset 4.30 dB	Mode Swe	eep 			Date: 10.FEB.2021	23:00:34				-		
Spectrum Staf Level 0.00 dBm SGL Count 100/100 Limit Check Limit Check 20 dBm So dBm So dBm 50 dBm 70 dBm 90 dBm 10 dBm 1	Offset 4.30 dB	Mode Swe			(₩)	Date: 10.FEB.2021	23:00:34						
Spectrum Staf Level 0.00 dBm SGL Count 100/100 1 AvgPwr Limit Check 10 dBm SO d	Offset 4.30 dB	Mode Swe	eep	3 	top 24.0 GHz <u>ALimit</u> -24.30 dB	Date: 10.FEB.2021	23:00:34						
Spectrum Tef Level 0.00 dBm SGL Count 100/100 1 AvgPwr Limit Check 10 dBm SGL Count 100/100 1 AvgPwr 20 dBm Sol dBm Sol dBm 20 dBm	Offset 4.30 dB	Mode Swe PA 8 PA	2000 Sep	Power Abs -64.30 dBm -57.50 dBm -57.50 dBm	top 24.0 GHz <u>ALimit</u> -24.30 dB -17.50 dB -17.50 dB	Date: 10.FEB.2021	23:00:34						
Spectrum ************************************	Offset 4.30 dB	Mode Swe PAES PAES PAES PAES PAES PAES PAES PAES	9ep 9 pts Frequency 9 22.37631 MHz 2.2904 GHz	2000 Abs 	Limit -24.30 dB -17.50 dB -17.50 dB -17.92 dB -20.11 dB -18.68 dB	Date: 10.FEB.2021	23:00:34						
Spectrum Imit Ref Level 0.00 dBm SGL Count 100/100 I MagParr Limit Check 10 dBm FURIOUS 20 dBm So dBm 30 dBm So dBm 50 dBm So dBm 90 dBm So dBm 1.000 GHz So dBm 3.000 GHz So dBm	Offset 4.30 dB	Mode Swe PA 8 PA 8	Pep	Power Abs -64.30 dBm -57.50 dBm -57.50 dBm -57.92 dBm -60.11 dBm	Lop 24.0 GHz	Date: 10.FEB.2021	23:00:34						
Ref Level 0.00 dBm SGL Count 100/100 SGL Count 100/100 Limit Check 10 dBm 10 dBm PUNIOUS 20 dBm 30 dBm 50 dBm 60 dBm 60 dBm 90 dBm 90 dBm 90 dBm 8tart 30.0 MHz 90 dBm 90.000 MHz 1.000 GHz 1.000 GHz 3.328 GHz 1.000 GHz 1.000 GHz 1.000 GHz 1.000 GHz	Offset 4.30 dB	Mode Swe PA 8 PA	B pts Frequency B 2.23631 MHz 2.233237 GHz 4.62084 GHz 2.33237 GHz 4.61243 GHz 13.52076 GHz 13.52376 GHz 13.52376 GHz	Power Abs -64-30 dBm -57.50 dBm -57.50 dBm -58.68 dBm -58.68 dBm -58.68 dBm	ALimit -24.30 dB -17.50 dB -17.50 dB -17.09 dB -14.92 dB -20.11 dB -18.69 dB -12.44 dB	Date: 10.FEB.2021	23:00:34						
Spectrum Image: Content of the characteristic of the characteristeristic of the characterist	Offset 4.30 dB INE_AB8 INE_AB	Mode Swe PA 8 PA	B pts Frequency B 2.23631 MHz 2.233237 GHz 4.62084 GHz 2.33237 GHz 4.61243 GHz 13.52076 GHz 13.52376 GHz 13.52376 GHz	Power Abs -64.30 dBm -57.50 dBm -57.50 dBm -57.00 dBm -57.00 dBm -58.68 dBm -60.11 dBm -58.68 dBm -58.64 dBm -58.67 dBm	ALimit -24.30 dB -17.50 dB -17.50 dB -17.09 dB -14.92 dB -20.11 dB -18.69 dB -12.44 dB	Date: 10.FEB.2021	23:00:34						











Frequency Stability

Test C	Conditions	NR n30 (BPSK) / Middle Channel	Limit
Temperature	Voltage	BW 10MHz	Within Band
(°C)	(Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0014	
40	Normal Voltage	0.0017	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0013	
10	Normal Voltage	0.0013	
0	Normal Voltage	0.0012	
-10	Normal Voltage	0.0019	PASS
-20	Normal Voltage	0.0015	
-30	Normal Voltage	0.0017	
20	Maximum Voltage	0.0019	
20	Normal Voltage	0.0013	
20	Battery End Point	0.0021	

Note:

- 1. Normal Voltage =3.3 V. ; Battery End Point (BEP) =3.14 V. ; Maximum Voltage =4.4 V.
- 2. Note: The frequency fundamental emissions stay within the authorized frequency block.



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

	LTE Band 30 / 10MHz / QPSK / RB Size 1 Offset 0										
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)		
	4611.60	-62.32	-40	-22.32	-55.11	-68.57	6.45	12.70	Н		
	6917.40	-59.53	-40	-19.53	-54.92	-62.93	8.40	11.80	Н		
NA: al all a	9223.20	-54.43	-40	-14.43	-55.51	-56.78	9.65	12.00	Н		
Middle	4611.60	-62.59	-40	-22.59	-55.23	-68.84	6.45	12.70	V		
	6917.40	-59.74	-40	-19.74	-55.1	-63.14	8.40	11.80	V		
	9223.20	-54.85	-40	-14.85	-55.51	-57.20	9.65	12.00	V		

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