Radio Test Report

Report No.: STS2502057W02

Issued for

Foxx Development Inc.

3480 Preston Ridge Road Suite 500, Alpharetta, GA 30005, United States

Product Name:	LPWA Module
Brand Name:	FOXX
Model Name:	IQ20
Series Model:	N/A
FCC ID:	2AQRM-IQ20
Test Standard:	47 CFR Part 2, 24(E), 27

TEST RESULT CERTIFICATION

Applicant's Name.....:	Foxx Development Inc.
Address.....:	3480 Preston Ridge Road Suite 500, Alpharetta, GA 30005, United States
Manufacturer's Name.....:	Foxx Development Inc.
Address.....:	3480 Preston Ridge Road Suite 500, Alpharetta, GA 30005, United States

Product description

Product Name .....:	LPWA Module
Brand Name .....:	FOXX
Model Name.....:	IQ20
Series Model .....:	N/A
Test Standards.....:	47 CFR Part 2, 24(E), 27
Test Procedure.....:	KDB 971168 D01 v03r01, ANSI C63.26 2015

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Date of Test.....:	
Date of receipt of test item .....:	19 Feb. 2025
Date (s) of performance of tests :	19 Feb. 2025 ~ 17 Mar. 2025
Date of Issue .....:	17 Mar. 2025
Test Result .....:	Pass

Testing Engineer : Lenon.Hou

(Lenon Hou)

Technical Manager : Tony Liu

(Tony Liu)

Authorized Signatory : Bovey Yang

(Bovey Yang)

SHENZHEN STS TEST SERVICES CO., LTD. TESTING APPROVAL

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	17 Mar. 2025	STS2502057W02	ALL	Initial Issue

SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

The radiated emission testing was performed according to the procedures of KDB 971168 D01 v03r01 and ANSI C63.26(2015)

Test Description	FCC Rules	Band	Test Limit	Test Result
Conducted Output Power	2.1046	/	Reporting Only	PASS
Transmitter Radiated Power	22.913	B5, B26	ERP < 7 Watt	PASS
	24.232(c)	B2, B25	EIRP < 2Watt	
	27.50(b)	B13	ERP < 3 Watt	
	27.50(c)	B12, B71	ERP < 3 Watt	
	27.50(d)	B4, B66	EIRP < 1Watt	
	90.635(b)	B26	ERP < 100Watt	
Peak-to-Average Ratio	22.913(d)	B5, B26	< 13 dB	PASS
	24.232(d)	B2, B25		
	27.50	B4, B12, B13, B66, B71		
Occupied Bandwidth	2.1049	/	Reporting Only	PASS
Frequency Stability	2.1055	/	< 2.5 ppm	PASS
	22.355	B5, B26		
	24.235	B2, B25		
	27.54	B4, B12, B13, B66, B71		
	90.213	B26		
Spurious Emission at Antenna Terminals	2.1051	/	< 43+10log10(P[Watts])	PASS
	22.917	B5, B26		
	24.238(a)	B2, B25		
	27.53(c)	B13		

	27.53(g)	B12, B71		
	27.53(h)	B4, B66		
	90.691	B26		
Band Edge	2.1051	/	Please refer to standard	PASS
	22.917	B5, B26		
	24.238(a)	B2, B25		
	27.53(c)	B13		
	27.53(g)	B12, B71		
	27.53(h)	B4, B66		
	90.691	B26		
Field Strength of Spurious Radiation	2.1053	/	< 43+10log10(P[Watts])	PASS
	22.917	B5, B26		
	24.238(a)	B2, B25		
	27.53(c)	B13		
	27.53(g)	B12, B71		
	27.53(h)	B4, B66		
	90.691	B26		

1. TEST FACTORY & MEASUREMENT UNCERTAINTY

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	RF output power, conducted	±0.755dB
2	Unwanted Emissions, conducted	±2.874dB
3	All emissions, radiated 30-1GHz	±4.18dB
4	All emissions, radiated 1G-6GHz	±4.90dB
5	All emissions, radiated>6G	±5.24dB
6	Conducted Emission (9KHz-150KHz)	±2.19dB
7	Conducted Emission (150KHz-30MHz)	±2.53dB
8	Occupied Channel Bandwidth	±3.5%
9	Peak-to-Average Ratio	±0.845dB

2. GENERAL INFORMATION

2.1 TECHNICAL SPECIFICATIONS AND REGULATIONS

2.1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Name	LPWA Module
Trade Name	FOXX
Model Name	IQ20
Series Model	N/A
Model Difference	N/A
Frequency Bands	TX: NB-IoT Band 2:1850-1910MHz NB-IoT Band 4:1710-1755MHz NB-IoT Band 5:824-849MHz NB-IoT Band 12:699-716MHz NB-IoT Band 13:777-787MHz NB-IoT Band 25:1850-1915MHz NB-IoT Band 26:824-849MHz NB-IoT Band 66:1710-1780MHz NB-IoT Band 71: 663-698MHz RX: NB-IoT Band 2:1930-1990MHz NB-IoT Band 4:2110-2155MHz NB-IoT Band 5:869-894MHz NB-IoT Band 12:729-746MHz NB-IoT Band 13:746-756MHz NB-IoT Band 25:1930-1995MHz NB-IoT Band 26:869-894MHz NB-IoT Band 66:2110-2200MHz NB-IoT Band 71: 617-652MHz
Max RF Output Power:	NB-IoT Band 2: 19.13dBm NB-IoT Band 4: 19.03dBm NB-IoT Band 5: 19.63dBm NB-IoT Band 12: 19.96dBm NB-IoT Band 13: 19.44dBm NB-IoT Band 25: 18.34dBm NB-IoT Band 26: 19.84dBm NB-IoT Band 66: 18.40dBm NB-IoT Band 71: 20.21dBm
Modulation Characteristics:	NB-IoT: BPSK/QPSK
SIM Card	SIM 1 and SIM 2 is a chipset unit and tested as single chipset, SIM 1 is used to tested
Antenna	External
Antenna gain	NB-IoT B2:1.63 dBi NB-IoT B4:3.12 dBi NB-IoT B5:0.64 dBi NB-IoT B12:0.95 dBi NB-IoT B13:2.23 dBi NB-IoT B25:1.87 dBi NB-IoT B26:0.91 dBi NB-IoT B66:3.12 dBi

	NB-IoT B71:0.22 dBi
Power Rating	Input: DC 3.8V
Adapter	N/A
Battery	N/A
Extreme Vol. Limits	DC2.7V ~ DC4.8V (Normal: DC 3.8V)
Extreme Temp. Tolerance	-40℃ to +85℃
Hardware version number	V1.03
Software version number	R2117.01

Note: The antenna information refer the manufacturer provide report, applicable only to the tested sa-mple identified in the report.

2.1.2 MEASUREMENT INSTRUMENTS

RF Radiation Test Equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Wireless Communications Test Set	R&S	CMW 500	117239	2024.09.23	2025.09.22
Pre-Amplifier(0.1M-3GHz)	EM	EM330	060665	2025.02.22	2026.02.21
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2024.09.23	2025.09.22
Pre-mplifier(18G-40G)	SKET	LNPA_1840-50	SK2018101801	2025.02.22	2026.02.21
Positioning Controller	MF	MF-7802	MF-780208587	N/A	N/A
Signal Analyzer	R&S	FSV 40-N	101823	2024.09.23	2025.09.22
Switch Control Box	N/A	N/A	N/A	N/A	N/A
Filter Box	BALUN Technology	SU319E	BL-SZ1530051	N/A	N/A
Video Controller	SKET	FCS C-3	N/A	N/A	N/A
Bilog Antenna	TESEQ	CBL6111D	34678	2024.09.30	2025.09.29
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2024.09.25	2025.09.24
Horn Antenna	A-INFOMW	LB-180400-KF	J211020657	2023.10.10	2025.10.09
Antenna Mast	MF	MFA-440H	N/A	N/A	N/A
Turn Table	MF	N/A	N/A	N/A	N/A
AC Power Source	APC	KDF-11010G	F214050035	N/A	N/A
DC Power Supply	Zhaoxin	RXN 605D	20R605D11010081	N/A	N/A
Test SW	EMC Test Software	15.2.0.339			
	EZ-EMC	Ver.STSLAB-03A1 RE			
RF Connected Test Equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Wireless Communications Test Set	R&S	CMW 500	131428	2025.02.22	2026.02.21
Signal Analyzer	Agilent	N9020A	MY52440124	2025.02.22	2026.02.21
RF Automatic Test System	Maiwei	MW200-SFCB	N/A	N/A	N/A
Power Divider	QYMW	QY-PS2-1/26.5-KE	N/A	2025.02.22	2026.02.21
Temperature & Humidity Test Chamber	Safety test	AG80L	171200018	2025.02.22	2026.02.21
Programmable Power Supply	Agilent	E3642A	MY40002025	2024.09.23	2025.09.22
Test SW	MTS 8200	2.0.0.0			

2.1.3 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 factorbetween 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.

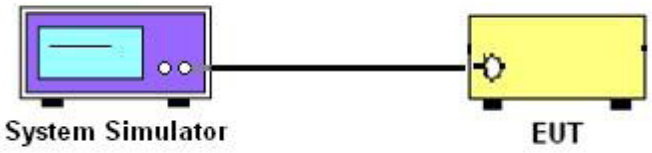
3. CONDUCTED OUTPUT POWER&RADIATED POWER AND EFFECTIVE ISOTROPIC RADIATED POWER

3.1 DESCRIPTION OF THE CONDUCTED OUTPUT POWER MEASUREMENT

3.1.1 MEASUREMENT METHOD

CONDUCTED OUTPUT POWER:
A system simulator was used to establish communication with the eut. Its parameters were set to force the eut transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.
Configuration follows KDB 971168 D01 v03r01.
C63.26 2015 Section 5.2.5.5.
In many cases, RF output power limits are specified in terms of the ERP or the EIRP. Typically, ERP is specified when the operating frequency is less than or equal to 1 GHz and EIRP is specified when the operating frequency is greater than 1 GHz. Both are defined as the product of the power supplied to the antenna and its gain (relative to a dipole antenna in the case of ERP, and relative to an isotropic antenna in the case of EIRP); however, when working in decibels (i.e., logarithmic scale), the ERP and EIRP represent the sum of the transmit antenna gain (in dBd or dBi, respectively) and the conducted RF output power (expressed in dB relative to watts or milliwatts).
The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation (1) as follows:
(1) ERP or EIRP = PMeas + GT
ERP= EIRP-2.15
where
ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as PMeas, e.g., dBm or dBW)
PMeas measured transmitter output power or PSD, in dBm or dBW
GT gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)
For devices utilizing multiple antennas, see 6.4 for guidance with respect to determining the effective array transmit antenna gain term to be used in the above equation.
The following equations demonstrate the mathematical relationship between ERP and EIRP:
a) ERP = EIRP − 2.15, where ERP and EIRP are expressed in consistent units.
b) EIRP = ERP + 2.15, where ERP and EIRP are expressed in consistent units.

3.1.2 TEST SETUP



3.1.3 TEST PROCEDURES

1. The transmitter output port was connected to system simulator.

2. Set EUT at maximum power through the system simulator.

3. Select lowest/middle/highest channels for each band and different modulation.

4. Measure and record the power level from the system simulator.

3.1.4 TEST RESULTS

NB-IoT Band 2 Maximum Average Power [dBm]										
Mode	UL Channel	Modulation	Subcarrier Space (KHz)	RB Configure	Conduction AVG Power(dBm)	Ant Gain(dBi)	EIRP (dBm)	EIRP Limit(W)	EIRP Limit(dBm)	Verdict
Band 2 Standalone	Lowest	BPSK	3.75	**1#0**	17.78	1.63	19.41	2.00	33.01	PASS
				1#47	18.98	1.63	20.61	2.00	33.01	PASS
			15	**1#0**	18.54	1.63	20.17	2.00	33.01	PASS
				1#11	18.55	1.63	20.18	2.00	33.01	PASS
		QPSK	3.75	**1#0**	18.97	1.63	20.60	2.00	33.01	PASS
				1#47	19.13	1.63	20.76	2.00	33.01	PASS
			15	**1#0**	18.59	1.63	20.22	2.00	33.01	PASS
				1#11	18.49	1.63	20.12	2.00	33.01	PASS
				12#0	16.67	1.63	18.30	2.00	33.01	PASS
	Middle	BPSK	3.75	**1#0**	18.75	1.63	20.38	2.00	33.01	PASS
				1#47	18.61	1.63	20.24	2.00	33.01	PASS
			15	**1#0**	18.62	1.63	20.25	2.00	33.01	PASS
				1#11	18.28	1.63	19.91	2.00	33.01	PASS
		QPSK	3.75	**1#0**	18.64	1.63	20.27	2.00	33.01	PASS
				1#47	18.75	1.63	20.38	2.00	33.01	PASS
			15	**1#0**	18.30	1.63	19.93	2.00	33.01	PASS
				1#11	18.34	1.63	19.97	2.00	33.01	PASS
				12#0	16.52	1.63	18.15	2.00	33.01	PASS
	Highest	BPSK	3.75	**1#0**	18.71	1.63	20.34	2.00	33.01	PASS
				1#47	18.66	1.63	20.29	2.00	33.01	PASS
			15	**1#0**	18.53	1.63	20.16	2.00	33.01	PASS
				1#11	18.23	1.63	19.86	2.00	33.01	PASS
		QPSK	3.75	**1#0**	18.68	1.63	20.31	2.00	33.01	PASS
				1#47	18.69	1.63	20.32	2.00	33.01	PASS
			15	**1#0**	18.31	1.63	19.94	2.00	33.01	PASS
				1#11	18.27	1.63	19.90	2.00	33.01	PASS
				12#0	16.50	1.63	18.13	2.00	33.01	PASS

NB-IoT Band 4 Maximum Average Power [dBm]									
Mode	**UL Channel**	**Modulation**	**Subcarrier Space (KHz)**	**RB Configure**	**Conduction AVG Power(dBm)**	**Ant Gain（dBi）**	**EIRP (dBm)**	**EIRP Limit(W)**	
Band 4 Standalone	Lowest	BPSK	3.75	1#0	17.65	3.12	20.77	1.00	
				1#47	18.89	3.12	22.01	1.00	
			15	1#0	18.97	3.12	22.09	1.00	
				1#11	**19.03**	3.12	22.15	1.00	
		QPSK	3.75	1#0	18.92	3.12	22.04	1.00	
				1#47	18.89	3.12	22.01	1.00	
			15	1#0	19.01	3.12	22.13	1.00	
				1#11	18.92	3.12	22.04	1.00	
				12#0	16.97	3.12	20.09	1.00	
	Middle	BPSK	3.75	1#0	18.56	3.12	21.68	1.00	
				1#47	18.53	3.12	21.65	1.00	

			15	1#0	18.31	3.12	21.43	1.00	
				1#11	18.33	3.12	21.45	1.00	
		QPSK	3.75	1#0	18.53	3.12	21.65	1.00	
				1#47	18.61	3.12	21.73	1.00	
			15	1#0	18.60	3.12	21.72	1.00	
				1#11	18.41	3.12	21.53	1.00	
				12#0	16.71	3.12	19.83	1.00	
	Highest	BPSK	3.75	1#0	18.72	3.12	21.84	1.00	
				1#47	18.71	3.12	21.83	1.00	
			15	1#0	18.41	3.12	21.53	1.00	
				1#11	18.57	3.12	21.69	1.00	
		QPSK	3.75	1#0	18.82	3.12	21.94	1.00	
				1#47	18.78	3.12	21.90	1.00	
			15	1#0	18.61	3.12	21.73	1.00	
				1#11	18.62	3.12	21.74	1.00	
				12#0	16.90	3.12	20.02	1.00	

NB-IoT Band 5 Maximum Average Power [dBm]									
Mode	**UL Channel**	**Modulation**	**Subcarrier Space (KHz)**	**RB Configure**	**Conduction AVG Power(dBm)**	**Ant Gain（dBi）**	**ERP (dBm)**	**ERP Limit(W)**	
Band 5 Standalone	Lowest	BPSK	3.75	1#0	15.60	0.64	14.09	7.00	
				1#47	15.55	0.64	16.19	7.00	
			15	1#0	**19.63**	0.64	20.27	7.00	
				1#11	19.55	0.64	20.19	7.00	
		QPSK	3.75	1#0	15.61	0.64	16.25	7.00	
				1#47	15.54	0.64	16.18	7.00	
			15	1#0	19.62	0.64	20.26	7.00	
				1#11	19.39	0.64	20.03	7.00	
				12#0	17.60	0.64	18.24	7.00	
	Middle	BPSK	3.75	1#0	15.30	0.64	15.94	7.00	
				1#47	15.27	0.64	15.91	7.00	
			15	1#0	19.30	0.64	19.94	7.00	
				1#11	19.17	0.64	19.81	7.00	
		QPSK	3.75	1#0	15.32	0.64	15.96	7.00	
				1#47	15.28	0.64	15.92	7.00	
			15	1#0	19.21	0.64	19.85	7.00	
				1#11	19.07	0.64	19.71	7.00	

				12#0	17.32	0.64	17.96	7.00	
	Highest	BPSK	3.75	1#0	19.51	0.64	20.15	7.00	
				1#47	19.30	0.64	19.94	7.00	
			15	1#0	19.39	0.64	20.03	7.00	
				1#11	19.15	0.64	19.79	7.00	
		QPSK	3.75	1#0	19.51	0.64	20.15	7.00	
				1#47	19.30	0.64	19.94	7.00	
			15	1#0	19.26	0.64	19.90	7.00	
				1#11	19.18	0.64	19.82	7.00	
				12#0	17.35	0.64	17.99	7.00	

NB-IoT Band 12 Maximum Average Power [dBm]

Mode	UL Channel	Modulation	Subcarrier Space (KHz)	RB Configure	Conduction AVG Power(dBm)	Ant Gain（dBi）	ERP (dBm)	ERP Limit(W)	
Band 12 Standalone	Lowest	BPSK	3.75	1#0	19.90	0.95	18.70	3.00	
				1#47	**19.96**	0.95	20.91	3.00	
			15	1#0	19.64	0.95	20.59	3.00	
				1#11	19.60	0.95	20.55	3.00	
		QPSK	3.75	1#0	19.93	0.95	20.88	3.00	
				1#47	19.87	0.95	20.82	3.00	
			15	1#0	19.65	0.95	20.60	3.00	
				1#11	19.61	0.95	20.56	3.00	
				12#0	17.62	0.95	18.57	3.00	
	Middle	BPSK	3.75	1#0	19.56	0.95	20.51	3.00	
				1#47	19.52	0.95	20.47	3.00	
			15	1#0	19.45	0.95	20.40	3.00	
				1#11	19.35	0.95	20.30	3.00	
		QPSK	3.75	1#0	19.62	0.95	20.57	3.00	
				1#47	19.56	0.95	20.51	3.00	
			15	1#0	19.38	0.95	20.33	3.00	
				1#11	19.26	0.95	20.21	3.00	
				12#0	17.33	0.95	18.28	3.00	
	Highest	BPSK	3.75	1#0	19.57	0.95	20.52	3.00	
				1#47	19.50	0.95	20.45	3.00	
			15	1#0	19.47	0.95	20.42	3.00	
				1#11	19.31	0.95	20.26	3.00	
		QPSK	3.75	1#0	19.56	0.95	20.51	3.00	

				1#47	19.53	0.95	20.48	3.00	
			15	1#0	19.36	0.95	20.31	3.00	
				1#11	19.24	0.95	20.19	3.00	
				12#0	17.34	0.95	18.29	3.00	

NB-IoT Band 13 Maximum Average Power [dBm]

Mode	UL Channel	Modulation	Subcarrier Space (KHz)	RB Configure	Conduction AVG Power(dBm)	Ant Gain（dBi）	ERP (dBm)	ERP Limit(W)	
Band 13 Standalone	Lowest	BPSK	3.75	1#0	19.40	2.23	19.48	3.00	
				1#47	19.36	2.23	21.59	3.00	
			15	1#0	19.28	2.23	21.51	3.00	
				1#11	19.36	2.23	21.59	3.00	
		QPSK	3.75	1#0	19.41	2.23	21.64	3.00	
				1#47	19.30	2.23	21.53	3.00	
			15	1#0	19.40	2.23	21.63	3.00	
				1#11	19.36	2.23	21.59	3.00	
				12#0	17.37	2.23	19.60	3.00	
	Middle	BPSK	3.75	1#0	19.34	2.23	21.57	3.00	
				1#47	**19.44**	2.23	21.67	3.00	
			15	1#0	19.23	2.23	21.46	3.00	
				1#11	19.18	2.23	21.41	3.00	
		QPSK	3.75	1#0	19.35	2.23	21.58	3.00	
				1#47	19.32	2.23	21.55	3.00	
			15	1#0	19.26	2.23	21.49	3.00	
				1#11	19.15	2.23	21.38	3.00	
				12#0	17.32	2.23	19.55	3.00	
	Highest	BPSK	3.75	1#0	19.29	2.23	21.52	3.00	
				1#47	19.27	2.23	21.50	3.00	
			15	1#0	19.17	2.23	21.40	3.00	
				1#11	19.17	2.23	21.40	3.00	
		QPSK	3.75	1#0	19.30	2.23	21.53	3.00	
				1#47	19.31	2.23	21.54	3.00	
			15	1#0	19.12	2.23	21.35	3.00	
				1#11	19.13	2.23	21.36	3.00	
				12#0	17.30	2.23	19.53	3.00	

NB-IoT Band 25 Maximum Average Power [dBm]									
Mode	**UL Channel**	**Modulation**	**Subcarrier Space (KHz)**	**RB Configure**	**Conduction AVG Power(dBm)**	**Ant Gain（dBi）**	**EIRP (dBm)**	**EIRP Limit(W)**	
Band 5 Standalone	Lowest	BPSK	3.75	1#0	18.31	1.87	20.18	2.00	
				1#47	18.30	1.87	20.17	2.00	
			15	1#0	**18.34**	1.87	20.21	2.00	
				1#11	18.25	1.87	20.12	2.00	
		QPSK	3.75	1#0	18.31	1.87	20.18	2.00	
				1#47	18.30	1.87	20.17	2.00	
			15	1#0	18.30	1.87	20.17	2.00	
				1#11	18.33	1.87	20.20	2.00	
				12#0	16.24	1.87	18.11	2.00	
	Middle	BPSK	3.75	1#0	18.01	1.87	19.88	2.00	
				1#47	17.86	1.87	19.73	2.00	
			15	1#0	17.72	1.87	19.59	2.00	
				1#11	17.70	1.87	19.57	2.00	
		QPSK	3.75	1#0	18.07	1.87	19.94	2.00	
				1#47	17.92	1.87	19.79	2.00	
			15	1#0	17.78	1.87	19.65	2.00	
				1#11	17.85	1.87	19.72	2.00	
				12#0	16.04	1.87	17.91	2.00	
	Highest	BPSK	3.75	1#0	18.03	1.87	19.90	2.00	
				1#47	18.05	1.87	19.92	2.00	
			15	1#0	17.85	1.87	19.72	2.00	
				1#11	17.85	1.87	19.72	2.00	
		QPSK	3.75	1#0	18.08	1.87	19.95	2.00	
				1#47	18.02	1.87	19.89	2.00	
			15	1#0	17.88	1.87	19.75	2.00	
				1#11	17.76	1.87	19.63	2.00	
				12#0	16.13	1.87	18.00	2.00	

NB-IoT Band 66 Maximum Average Power [dBm]									
Mode	**UL Channel**	**Modulation**	**Subcarrier Space (KHz)**	**RB Configure**	**Conduction AVG Power(dBm)**	**Ant Gain（dBi）**	**EIRP (dBm)**	**EIRP Limit(W)**	
Band 5 Standalone	Lowest	BPSK	3.75	1#0	18.31	3.12	21.43	1.00	
				1#47	18.23	3.12	21.35	1.00	
			15	1#0	**18.40**	3.12	21.52	1.00	
				1#11	18.37	3.12	21.49	1.00	
		QPSK	3.75	1#0	18.33	3.12	21.45	1.00	
				1#47	18.34	3.12	21.46	1.00	
			15	1#0	18.38	3.12	21.50	1.00	
				1#11	18.30	3.12	21.42	1.00	
				12#0	16.43	3.12	19.55	1.00	
	Middle	BPSK	3.75	1#0	18.02	3.12	21.14	1.00	
				1#47	17.94	3.12	21.06	1.00	
			15	1#0	18.06	3.12	21.18	1.00	
				1#11	17.78	3.12	20.90	1.00	
		QPSK	3.75	1#0	17.97	3.12	21.09	1.00	
				1#47	17.96	3.12	21.08	1.00	
			15	1#0	17.84	3.12	20.96	1.00	
				1#11	17.80	3.12	20.92	1.00	
				12#0	16.10	3.12	19.22	1.00	
	Highest	BPSK	3.75	1#0	18.04	3.12	21.16	1.00	
				1#47	17.98	3.12	21.10	1.00	
			15	1#0	18.19	3.12	21.31	1.00	
				1#11	18.01	3.12	21.13	1.00	
		QPSK	3.75	1#0	18.06	3.12	21.18	1.00	
				1#47	17.98	3.12	21.10	1.00	
			15	1#0	17.79	3.12	20.91	1.00	
				1#11	17.68	3.12	20.80	1.00	
				12#0	16.29	3.12	19.41	1.00	

NB-IoT Band 13 Maximum Average Power [dBm]									
Mode	**UL Channel**	**Modulation**	**Subcarrier Space (KHz)**	**RB Configure**	**Conduction AVG Power(dBm)**	**Ant Gain（dBi）**	**ERP (dBm)**	**ERP Limit(W)**	
Band 5 Standalone	Lowest	BPSK	3.75	1#0	18.21	0.22	16.28	3.00	
				1#47	20.06	0.22	20.28	3.00	
			15	1#0	20.16	0.22	20.38	3.00	
				1#11	20.10	0.22	20.32	3.00	
		QPSK	3.75	1#0	20.09	0.22	20.31	3.00	
				1#47	**20.21**	0.22	20.43	3.00	
			15	1#0	20.20	0.22	20.42	3.00	
				1#11	20.16	0.22	20.38	3.00	
				12#0	18.04	0.22	18.26	3.00	
	Middle	BPSK	3.75	1#0	19.14	0.22	19.36	3.00	
				1#47	19.16	0.22	19.38	3.00	
			15	1#0	19.04	0.22	19.26	3.00	
				1#11	19.01	0.22	19.23	3.00	
		QPSK	3.75	1#0	19.17	0.22	19.39	3.00	
				1#47	19.15	0.22	19.37	3.00	
			15	1#0	19.06	0.22	19.28	3.00	
				1#11	18.96	0.22	19.18	3.00	
				12#0	16.95	0.22	17.17	3.00	
	Highest	BPSK	3.75	1#0	19.17	0.22	19.39	3.00	
				1#47	19.16	0.22	19.38	3.00	
			15	1#0	19.09	0.22	19.31	3.00	
				1#11	19.09	0.22	19.31	3.00	
		QPSK	3.75	1#0	19.12	0.22	19.34	3.00	
				1#47	19.16	0.22	19.38	3.00	
			15	1#0	19.09	0.22	19.31	3.00	
				1#11	18.96	0.22	19.18	3.00	
				12#0	17.07	0.22	17.29	3.00	

NB-IoT Band 26 Maximum Average Power [dBm]									
Mode	**UL Channel**	**Modulation**	**Subcarrier Space (KHz)**	**RB Configure**	**Conduction AVG Power(dBm)**	**Ant Gain（dBi）**	**ERP (dBm)**	**ERP Limit(W)**	
Band 5 Standalone	Lowest	BPSK	3.75	1#0	19.77	0.91	18.53	100.00	
				1#47	19.69	0.91	20.60	100.00	
			15	1#0	**19.84**	0.91	20.75	100.00	
				1#11	19.77	0.91	20.68	100.00	
		QPSK	3.75	1#0	19.79	0.91	20.70	100.00	
				1#47	19.68	0.91	20.59	100.00	
			15	1#0	19.83	0.91	20.74	100.00	
				1#11	19.83	0.91	20.74	100.00	
				12#0	17.75	0.91	18.66	100.00	
	Middle	BPSK	3.75	1#0	19.54	0.91	20.45	100.00	
				1#47	19.51	0.91	20.42	100.00	
			15	1#0	19.52	0.91	20.43	100.00	
				1#11	19.57	0.91	20.48	100.00	
		QPSK	3.75	1#0	19.57	0.91	20.48	100.00	
				1#47	19.51	0.91	20.42	100.00	
			15	1#0	19.68	0.91	20.59	100.00	
				1#11	19.62	0.91	20.53	100.00	
				12#0	17.73	0.91	18.64	100.00	
	Highest	BPSK	3.75	1#0	19.48	0.91	20.39	100.00	
				1#47	19.32	0.91	20.23	100.00	
			15	1#0	19.50	0.91	20.41	100.00	
				1#11	19.53	0.91	20.44	100.00	
		QPSK	3.75	1#0	19.47	0.91	20.38	100.00	
				1#47	19.40	0.91	20.31	100.00	
			15	1#0	19.58	0.91	20.49	100.00	
				1#11	19.44	0.91	20.35	100.00	
				12#0	17.76	0.91	18.67	100.00	

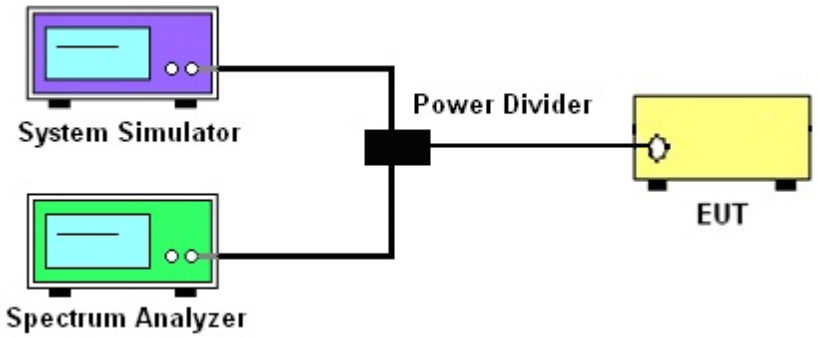
4. PEAK-TO-AVERAGE RATIO

4.1 DESCRIPTION OF THE CONDUCTED OUTPUT POWER MEASUREMENT

4.1.1 MEASUREMENT METHOD

Use one of the procedures presented in 4.1.3 to measure the total peak power and record as PPk. Use one of the applicable procedures presented 4.1.3 to measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:
PAPR (dB) = PPk (dBm) - PAvg (dBm).

4.1.2 TEST SETUP



4.1.3 TEST PROCEDURES

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.7 and ANSI C63.26 2015 Section 5.2.6.

2. The EUT was connected to spectrum and system simulator via a power divider

3. Select lowest, middle, and highest channels for each band and different modulation.

4. Set the test probe and measure the peak and average power of the spectrum analyzer

5. Record the deviation as Peak to Average Ratio.

4.1.4 TEST RESULTS

Note: The test data please reference to attachment “STS2502057W02_Appendix NB-IOT”.

5. OCCUPIED BANDWIDTH

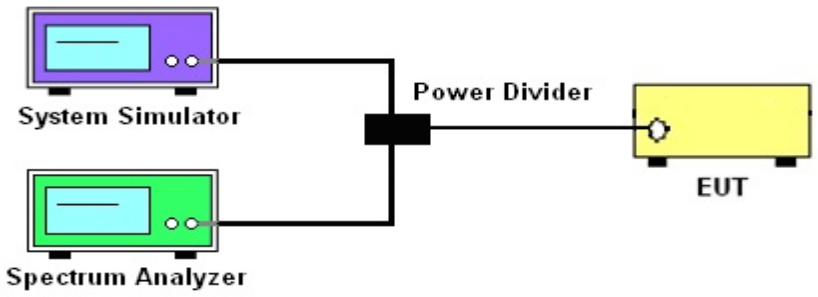
5.1 DESCRIPTION OF OCCUPIED BANDWIDTH MEASUREMENT

5.1.1 MEASUREMENT METHOD

1.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.

2.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.

5.1.2 TEST SETUP



5.1.3 TEST PROCEDURES

1. The testing follows FCC KDB 971168 D01 v03r01 Section 4.2 and 4.3.

2. The EUT was connected to spectrum and system simulator via a power divider

3. Select lowest, middle, and highest channels for each band and different modulation.

4. Set the test probe and measure the Occupied Bandwidth of the spectrum analyzer

5. Measure and record the Occupied Bandwidth from the Spectrum Analyzer.

5.1.4 MEASUREMENT RESULT

Note: The test data please reference to attachment “STS2502057W02_Appendix NB-IOT”.

6. CONDUCTED BAND EDGE

6.1 DESCRIPTION OF CONDUCTED BAND EDGE MEASUREMENT

6.1.1 MEASUREMENT METHOD

1. §22.917(a)
For operations in the 824 – 849 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

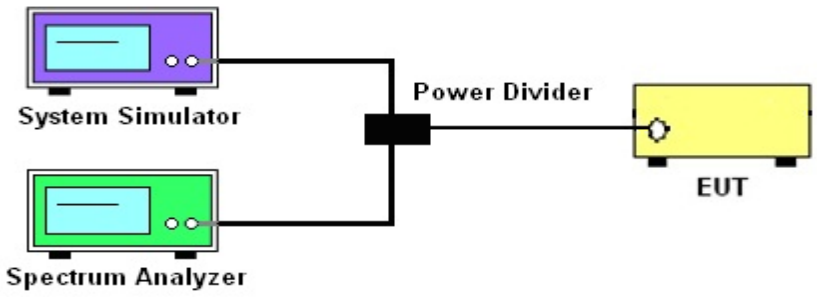
2. §24.238 (a)
For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed

3. §27.53 (h)
For operations in the 1710 – 1755 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

4. §27.53(m)(4)
For operations in the 2500 MHz ~ 2570 MHz band this section, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHzand 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licenseesoperating on frequencies below 2495 MHz may also submit a documented interference complaintagainst BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

5. §27.53 (g)
For operations in the 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

6.1.2 TEST SETUP



6.1.3 TEST PROCEDURES

1. The testing FCC KDB 971168 D01 v03r01 Section 6.0 and ANSI C63.26 2015 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. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

4. Set spectrum analyzer with RMS/AVG detector.

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

6.The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB)
= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
= -13dBm.

Band 7:
= P(W)- [55 + 10log(P)] (dB)
= [30 + 10log(P)] (dBm) - [55 + 10log(P)] (dB)
= -25dBm.

6.1.4 MEASUREMENT RESULT

Note: The test data please reference to attachment “STS2502057W02_Appendix NB-IOT”.

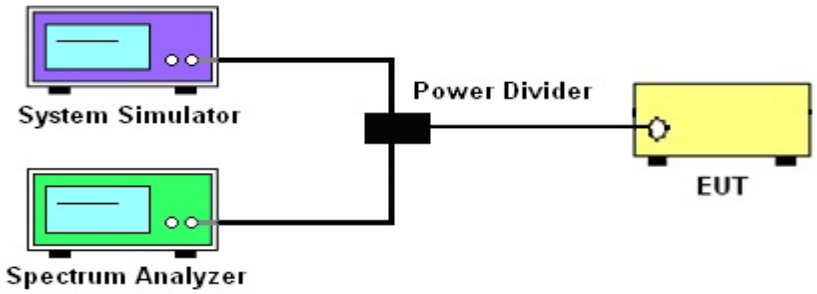
7. CONDUCTED SPURIOUS EMISSION

7.1 DESCRIPTION OF CONDUCTED SPURIOUS EMISSION MEASUREMENT

7.1.1 MEASUREMENT METHOD

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 43 + 10 log (P) dB.
For Band 7:
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 55 + 10 log (P) dB.
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

7.1.2 TEST SETUP



7.1.3 TEST PROCEDURES

1.The testing FCC KDB 971168 D01 v03r01 Section 6.0 and ANSI C63.26 2015 Section 5.7.

2. The EUT was connected to spectrum analyzer and system simulator via a power divider.

3. 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. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
5. The RF fundamental frequency should be excluded against the limit line in the operating frquency band.
6.The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
= -13dBm.
For Band 7: P(W)- [43 + 10log(P)] (dB) =-25dBm

7.1.4 TEST RESULTS

Note: The test data please reference to attachment “STS2502057W02_Appendix NB-IOT”.