FCC TEST REPORT

Product Name:	Machine Control Terminal
Trade Mark:	FJDynamics
Model No.:	MT-10
Report Number:	24102114224RFM-2
Test Standards:	FCC 47 CFR Part 22 FCC 47 CFR Part 24 FCC 47 CFR Part 27
FCC ID:	2A2LL-MT10
Test Result:	PASS
Date of Issue:	February 7, 2025

Prepared for:

FJ Dynamics Co., Ltd.
21F, Das Tower, No. 28, 1st South Keji Road, Nanshan District, Shenzhen, China

Prepared by:

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Date: February 7, 2025

Version

Version No.	Date	Description
V1.0	February 7, 2025	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	FJ Dynamics Co., Ltd.
Address of Applicant:	21F, Das Tower, No. 28, 1st South Keji Road, Nanshan District, Shenzhen, China
Manufacturer:	FJ Dynamics Co., Ltd.
Address of Manufacturer:	21F, Das Tower, No. 28, 1st South Keji Road, Nanshan District, Shenzhen, China

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Machine Control Terminal		
Model No.:	MT-10		
Trade Mark:	FJDynamics		
DUT Stage:	Identical Prototype		
EUT Supports Function: (Provided by the customer)	GSM Bands:	GSM850/PCS 1900	
	CDMA:	BC0	
	UTRA Bands:	WCDMA Band II/ Band V	
	E-UTRA Bands:	FDD Band 2/ 4/ 5/ 7	
		TDD Band 38/ 40/ 41	
	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth 5.0	
	RNSS Rx Band:	1559 MHz to 1610 MHz	GLONASS/ GPS
Software Version:	Android 13 (Provided by the customer)		
Hardware Version:	RC_NF209_UX1.1 (Provided by the customer)		
Sample Received Date:	October 21, 2024		
Sample Tested Date:	November 1, 2024 to December 2, 2024		

Remark:
The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.2.2 Description of Accessories

Battery	
Model No.:	446596PN3-1S2P
Battery Type:	Rechargeable Li-ion Battery
Rated Voltage:	3.8 Vdc
Limited Charge Voltage:	4.35Vdc
Typical Capacity:	10000 mAh

Others
Others metal structural parts DC car charger x 1

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	Single Carrier: LTE Band 2/4/5/7/38/41	
Type of Modulation:	QPSK, 16QAM	
Antenna Type: (Provided by the customer)	FPCB Antenna	
Antenna Gain: (Provided by the customer)	LTE Band 2:	-1.29 dBi
	LTE Band 4:	0.54 dBi
	LTE Band 5:	-6.06 dBi
	LTE Band 7:	2.61 dBi
	LTE Band 38:	1.18 dBi
	LTE Band 40:	1.70 dBi
	LTE Band 41:	1.84 dBi
Sample No.:	Radiated: S202410284527-ZJB01/1	
	Conducted: S202410214484-ZJB01/1	
Normal Test Voltage:	3.8 Vdc	
Extreme Test Voltage:	3.5 to 4.3Vdc	
Extreme Test Temperature:	-30 °C to +50 °C	

Summary of Results:

Bands	BW (MHz)	Modulation	Frequency Range (MHz)	Max RF Output Power (dBm) Conducted (Average)	Max RF Output Power (dBm) ERP/EIRP (Average)	ERP/EIRP (W)	99% BW (MHz)	Emission Designator
2	1.4	QPSK	1850.7-1909.3	24.69	23.40	0.2188	1.0964	1M10G7D
		16QAM		23.47	22.18	0.1652	1.0981	1M10W7D
	3	QPSK	1851.5-1908.5	24.56	23.27	0.2123	2.6922	2M69G7D
		16QAM		23.34	22.05	0.1603	2.6838	2M68W7D
	5	QPSK	1852.5-1907.5	24.88	23.59	0.2286	4.5037	4M50G7D
		16QAM		23.75	22.46	0.1762	4.5012	4M50W7D
	10	QPSK	1855.0-1905.0	24.80	23.51	0.2244	8.9779	8M98G7D
		16QAM		23.62	22.33	0.1710	8.9796	8M98W7D
	15	QPSK	1857.5-1902.5	24.80	23.51	0.2244	13.4790	13M5G7D
		16QAM		23.81	22.52	0.1786	13.4820	13M5W7D
	20	QPSK	1860.0-1900.0	24.78	23.49	0.2234	17.9530	18M0G7D
		16QAM		23.82	22.53	0.1791	17.9780	18M0W7D
4	1.4	QPSK	1710.7-1754.3	24.27	24.81	0.3027	1.0956	1M10G7D
		16QAM		23.06	23.60	0.2291	1.0997	1M10W7D
	3	QPSK	1711.5-1753.5	24.14	24.68	0.2938	2.6917	2M69G7D
		16QAM		22.87	23.41	0.2193	2.6845	2M68W7D
	5	QPSK	1712.5-1752.5	24.42	24.96	0.3133	4.5028	4M50G7D
		16QAM		23.31	23.85	0.2427	4.5049	4M50W7D
	10	QPSK	1715-1750	24.38	24.92	0.3105	8.9828	8M98G7D
		16QAM		23.13	23.67	0.2328	8.9842	8M98W7D
	15	QPSK	1717.5-1747.5	24.37	24.91	0.3097	13.4870	13M5G7D
		16QAM		23.35	23.89	0.2449	13.4930	13M5W7D
	20	QPSK	1720-1745	24.36	24.90	0.3090	17.9780	18M0G7D
		16QAM		23.39	23.93	0.2472	18.0200	18M0W7D
5	1.4	QPSK	824.7-848.3	24.18	15.97	0.0395	1.1006	1M10G7D
		16QAM		23.05	14.84	0.0305	1.0977	1M10W7D
	3	QPSK	825.5-847.5	24.06	15.85	0.0385	2.6879	2M69G7D
		16QAM		23.07	14.86	0.0306	2.6892	2M69W7D
	5	QPSK	826.5-846.5	24.41	16.20	0.0417	4.5000	4M50G7D
		16QAM		23.49	15.28	0.0337	4.5080	4M51W7D
	10	QPSK	829-844	24.39	16.18	0.0415	9.0078	9M01G7D
		16QAM		23.36	15.15	0.0327	8.9769	8M98W7D
7	5	QPSK	2502.5-2567.5	25.25	27.86	0.6109	4.5300	4M53G7D
		16QAM		24.03	26.64	0.4613	4.5261	4M53W7D
	10	QPSK	2505-2565	25.10	27.71	0.5902	9.0253	9M03G7D
		16QAM		24.02	26.63	0.4603	9.0186	9M02W7D

	15	QPSK	2507.5-2562.5	25.13	27.74	0.5943	13.5450	13M5G7D
		16QAM		24.18	26.79	0.4775	13.4900	13M5W7D
	20	QPSK	2510-2560	25.23	27.84	0.6081	17.9760	18M0G7D
		16QAM		24.04	26.65	0.4624	18.0300	18M0W7D
38	5	QPSK	2572.5-2617.5	24.90	26.08	0.4055	4.5018	4M50G7D
		16QAM		24.10	25.28	0.3373	4.4955	4M50W7D
	10	QPSK	2575-2615	24.59	25.77	0.3776	8.9948	8M99G7D
		16QAM		23.63	24.81	0.3027	8.9871	8M99W7D
	15	QPSK	2577.5-2612.5	24.76	25.94	0.3926	13.4470	13M4G7D
		16QAM		23.60	24.78	0.3006	13.4790	13M5W7D
	20	QPSK	2580-2610	24.60	25.78	0.3784	17.9530	18M0G7D
		16QAM		23.50	24.68	0.2938	17.9110	17M9W7D
40A	5	QPSK	2307.5-2312.5	22.90	24.60	0.2884	4.5067	4M51G7D
		16QAM		22.14	23.84	0.2421	4.5209	4M52W7D
	10	QPSK	2310.0	22.89	24.59	0.2877	8.9853	8M99W7D
		16QAM		21.85	23.55	0.2265	8.9758	8M98G7D
40B	5	QPSK	2352.5-2357.5	22.94	24.64	0.2911	4.5057	4M51W7D
		16QAM		22.20	23.90	0.2455	4.5171	4M52W7D
	10	QPSK	2355.0	23.01	24.71	0.2958	8.9716	8M97G7D
		16QAM		21.99	23.69	0.2339	8.9876	8M99W7D
41	5	QPSK	2537.5-2652.5	24.62	26.46	0.4426	4.5000	4M50G7D
		16QAM		23.59	25.43	0.3491	4.4991	4M50W7D
	10	QPSK	2540-2650	24.61	26.45	0.4416	8.9782	8M98G7D
		16QAM		23.55	25.39	0.3459	8.9904	8M99W7D
	15	QPSK	2542.5-2647.5	24.62	26.46	0.4426	13.4870	13M5G7D
		16QAM		23.54	25.38	0.3451	13.4830	13M5W7D
	20	QPSK	2545-2645	24.59	26.43	0.4395	17.9340	17M9G7D
		16QAM		23.47	25.31	0.3396	17.9120	17M9W7D

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
Dummy battery	N/A	N/A	N/A	Applicant

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.3 Meter	UnionTrust

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories
CAB identifier: CN0032

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted Output Power	±0.7 dB
2	99%&26dB Bandwidth	±1.86 %
3	Emission Mask	±2.7 dBm
4	Spurious emissions at antenna terminals	±2.7 dBm
5	Field strength of spurious radiation	30 MHz-1 GHz: ±4.9 dB 1 GHz-18 GHz: ±4.8 dB 18 GHz-40 GHz: ±5.1 dB
6	Frequency stability	±6.5 x 10^{-8}
7	Humidity	±3.9 %
8	Temperature	±0.62 ℃
9	DC Voltages	±0.68 %

2. TEST SUMMARY

FCC 47 CFR Part 24 Test Cases (Band 2)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 24.232(d)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 24.235	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 4)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(h)(1)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 22 Test Cases (Band 5)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 22.913(a)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 22.355	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 7 & Band 38 & Band 41)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(h)(2)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(h)(2)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(m)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Test Cases (LTE Band 40)			
Test Item	**Test Requirement**	**Test Method**	**Result**
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(a)(3)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(a)(3)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(a)(B)	KDB 971168 D01v02r02	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) FCC 47 CFR Part 27.50(a)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(a)(4)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(a) (4)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(a) (4)	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI/TIA/EIA-603-D 2010 & KDB 971168 D01v02r02	PASS

Disclaimer and Explanations:
The declared of product specification and data (e.g. antenna gain, RF specification, etc) for EUT presented in the report are provided by the customer, and the customer takes all the responsibilities for the accuracy of product specification.

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date**	**Cal. Due date**
☑	3m SAC	ETS-LINDGREN	3M	Euroshiedpn-CT001270-1317	11-Nov-2023	10-Nov-2026
☑	Receiver	R&S	ESIB26	100114	25-Oct-2024	24-Oct-2025
☐	Loop Antenna	ETS-LINDGREN	6502	00202525	28-Oct-2024	27-Oct-2025
☑	Broadband Antenna	ETS-LINDGREN	3142E	00201566	29-Oct-2024	28-Oct-2025
☑	6dB Attenuator	Talent	RA6A5-N-18	18103001	29-Oct-2024	28-Oct-2025
☑	Preamplifier	HP	8447F	2805A02960	25-Oct-2024	24-Oct-2025
☑	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	01-Apr-2024	31-Mar-2025
☑	Pre-amplifier	ETS-LINDGREN	00118385	00201874	01-Apr-2024	31-Mar-2025
☑	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	28-Oct-2024	27-Oct-2025
☑	Pre-amplifier	ETS-LINDGREN	00118384	00202652	28-Oct-2024	27-Oct-2025
☑	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☑	Test Software	Audix	e3	Software Version: 9.160323		

RF Conducted Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date**	**Cal. Due date**
☑	EXA Spectrum Analyzer	KEYSIGHT	N9020A	MY51286807	25-Oct-2024	24-Oct-2025
☑	DC Source	KIKUSUI	PWR400L	LK003024	19-Jul-2024	18-Jul-2025
☑	Digital multimeter	FLUKE	15B+	30701460WS15	29-Oct-2024	28-Oct-2025
☑	Temp & Humidity chamber	Votisch	VT4002	58566133290020	29-Mar-2024	28-Mar-2025
☑	Wideband Radio Communication Tester	R&S	CMW500	119583	29-Mar-2024	28-Mar-2025
☐	Wideband Radio Communication Tester	R&S	CMW500	120932	29-Mar-2024	28-Mar-2025

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	3.8	20 to 75
TL/VL	-30	3.5	20 to 75
TH/VL	+50	3.5	20 to 75
TL/VH	-30	4.3	20 to 75
TH/VH	+50	4.3	20 to 75

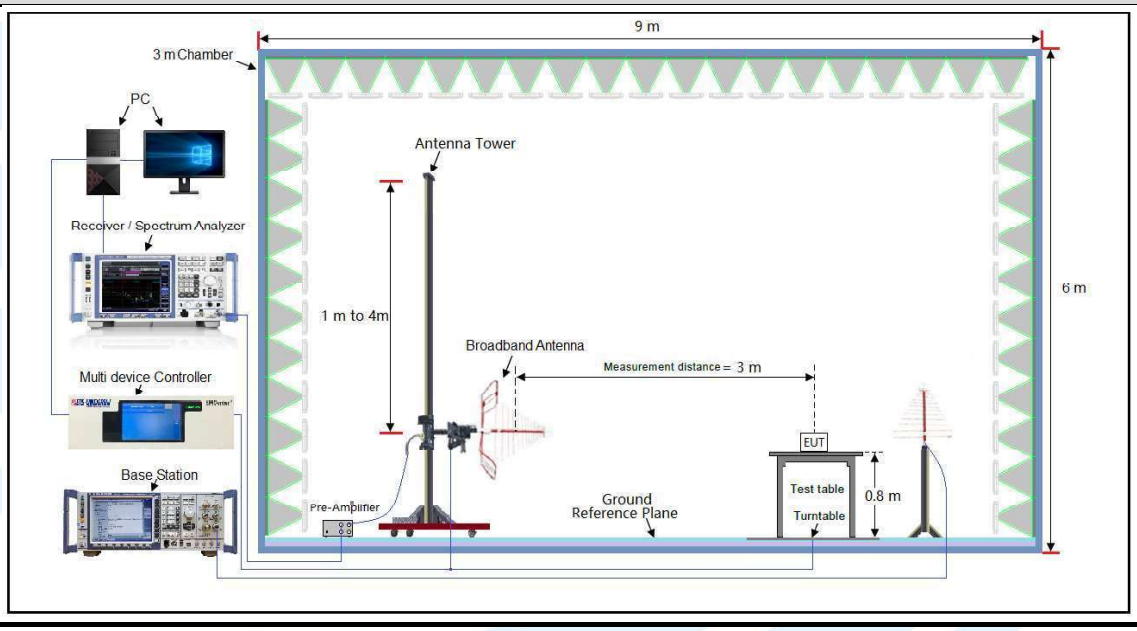
Remark:

1) The EUT just work in such extreme temperature of -30 °C to +50 °C and the extreme voltage of 3.5 V to 4.3 V, so here the EUT is tested in the temperature of -30 °C to +50 °C and the voltage of 3.5 V to 4.3 V.
2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

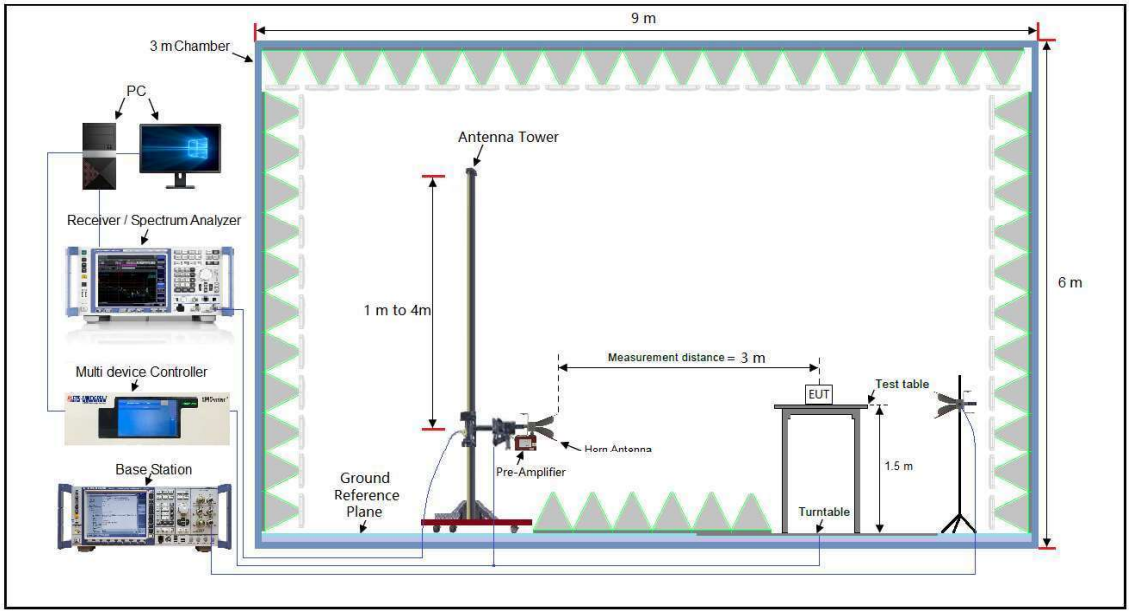
4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

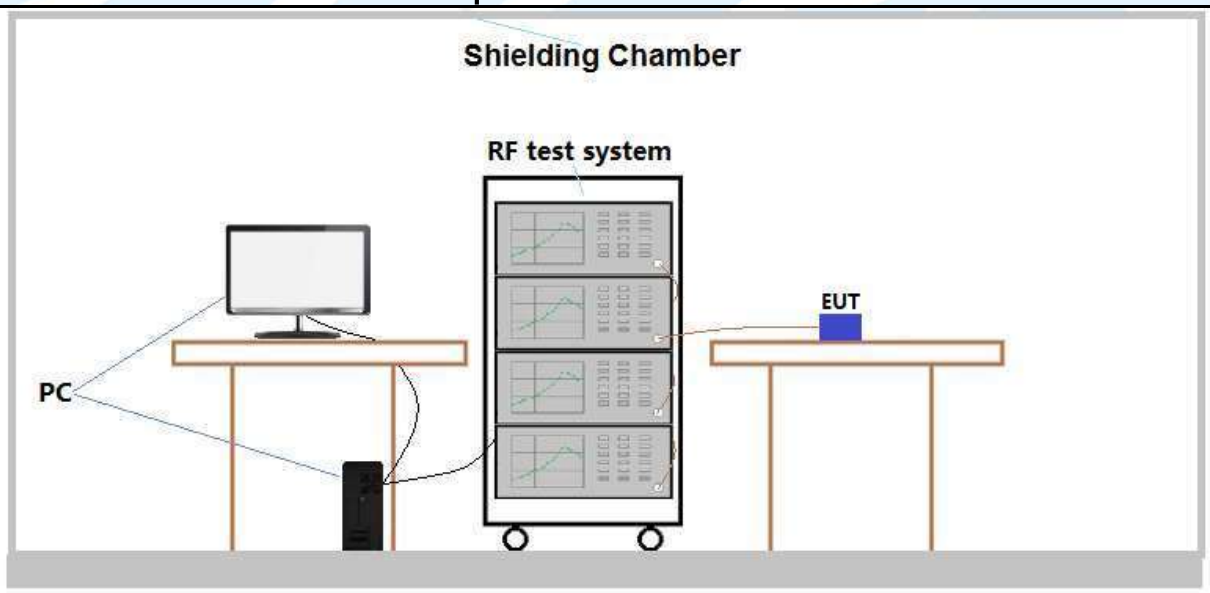
Radiated Emissions 30MHz to 1GHz Test setup



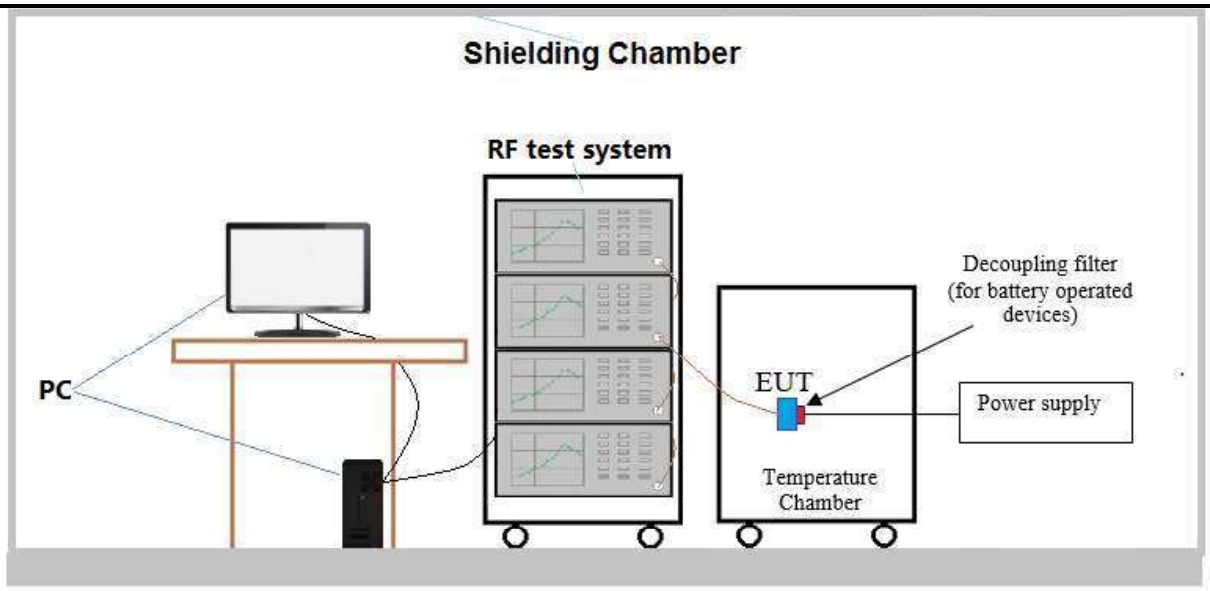
Radiated Emissions Above 1GHz Test setup



4.2.2 For Conducted RF test setup



Normal Environment



Extreme Environment

4.3 TEST CHANNELS

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
LTE Band 2 TX: 1850-1910MHz	Low Range	1.4	18607	1850.7
		3	18615	1851.5
		5	18625	1852.5
		10	18650	1855
		15	18675	1857.5
		20	18700	1860
	Middle Range	1.4/3/5/10/15/20	18900	1880
	High Range	1.4	19193	1909.3
		3	19185	1908.5
		5	19175	1907.5
		10	19150	1905
		15	19125	1902.5
		20	19100	1900
LTE Band 4 TX: 1710-1755MHz	Low Range	1.4	19957	1710.7
		3	19965	1711.5
		5	19975	1712.5
		10	20000	1715
		15	20025	1717.5
		20	20050	1720
	Middle Range	1.4/3/5/10/ 15/20	20175	1732.5
	High Range	1.4	20393	1754.3
		3	20385	1753.5
		5	20375	1752.5
		10	20350	1750
		15	20325	1747.5
		20	20300	1745
LTE band 5 TX: 824–849MHz	Low Range	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829
	Middle Range	1.4/3/5/10	20525	836.5
	High Range	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844
LTE Band 7 TX: 2500-2570MHz	Low Range	5	20775	2502.5
		10	20800	2505
		15	20825	2507.5
		20	20850	2510
	Middle Range	5/10/15/20	21100	2535
	High Range	5	21425	2567.5
		10	21400	2565
		15	21375	2562.5
		20	21350	2560
LTE Band 40A TX:2305-2315MHz	Low Range	5	38725	2307.5
		10	/	/
	Middle Range	5/10	38750	2310
	High Range	5	38775	2312.5
		10	/	/
LTE Band 40B TX: 2350-2360MHz	Low Range	5	39175	2352.5
		10	/	/
	Middle Range	5/10	39200	2355
	High Range	5	39225	2357.5

Band	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink (MHz)
		10	/	/
LTE Band 38 TX: 2570-2620MHz	Low Range	5	37775	2572.5
		10	37800	2575
		15	37825	2577.5
		20	37850	2580
	Middle Range	5/10/ 15/20	38000	2595
	High Range	5	38225	2617.5
		10	38200	2615
		15	38175	2612.5
		20	38150	2610
LTE Band 41 TX: 2535-2655MHz	Low Range	5	40065	2537.5
		10	40090	2540
		15	40115	2542.5
		20	40140	2545
	Middle Range	5/10/ 15/20	40690	2600
	High Range	5	41215	2652.5
		10	41190	2650
		15	41165	2647.5
		20	41140	2645

4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.5 PRE-SCAN

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the LTE worse case mode applicability and tested channel detail as below:

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Conducted output power	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☒	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	40	-	-	☒	☒	-	-	☒	☒	☐	☒	☒	☒	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	☒
99%&26dB Bandwidth	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☐	☐	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒	☒
	40	-	-	☒	☒	-	-	☒	☒	☐	☐	☐	☒	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
peak-to-average ratio	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☒	☒
	40	-	-	☐	☒	-	-	☒	☒	☐	☐	☐	☒	☐	☒	☐
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☐	☐	☒	☒	☒	☒
	41	-	-	☐	☐	☐	☒	☒	☒	☐	☐	☐	☒	☐	☒	☐

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Band Edge at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☒	☒	☐	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☒	☒	☐	☒
	40	-	-	☒	☒	-	-	☒	☒	☐	☒	☐	☒	☒	☐	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☒	☒	☐	☒
Spurious emissions at antenna terminals	2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	5	☒	☒	☒	☒	--	--	☒	☒	☒	☒	☐	☐	☒	☒	☒
	7	-	-	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☒	☒	☒
	40	-	-	☒	☒	-	-	☒	☒	☐	☒	☐	☐	☒	☒	☒
	38	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒
	41	-	-	☒	☒	☒	☒	☒	☒	☐	☒	☐	☐	☒	☒	☒

Item	Band	Bandwidth(MHz)						Modulation			RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Field strength of spurious radiation	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☒	☐	☐	☒	☒	☒
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	40	-	-	☐	☒	-	-	☒	☐	☐	☒	☐	☐	☒	☒	☒
	38	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
	41	-	-	☐	☐	☐	☒	☒	☐	☐	☒	☐	☐	☒	☒	☒
Frequency stability	2	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	4	☐	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	5	☐	☐	☐	☒	--	--	☒	☐	☐	☐	☐	☒	☐	☒	☐
	7	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	40	-	-	☐	☒	-	-	☒	☐	☐	☐	☐	☒	☐	☒	☐
	38	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐
	41	-	-	☐	☐	☐	☒	☒	☐	☐	☐	☐	☒	☐	☒	☐

Remark:
The mark "☒" means is chosen for testing; The mark "☐" means is not chosen for testing;
The mark "-" means is not supported bandwidth

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 22	Public Mobile Services
3	FCC 47 CFR Part 27	Miscellaneous Wireless Communications Services
4	FCC 47 CFR Part 24	Personal Communications Services
5	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
6	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v03r01

5.2 CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 2.1046(a)
LTE Band 2: FCC 47 CFR Part 24.232(c)
LTE Band 4: FCC 47 CFR Part 27.50(d)(4)
LTE Band 5: FCC 47 CFR Part 22.913(a)
LTE Band 7& Band 38 & Band 41: FCC 47 CFR Part 27.50(h)(2)
LTE Band 40: FCC 47 CFR Part 27.50(a)(3)

Test Method: KDB 971168 D01v03r01 & ANSI C63.26-2015

Limit:

FCC 47 CFR Part 22.913(a):
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 47 CFR Part 24.232(c):
Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4):
Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(h)(2):
Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

FCC 47 CFR Part 27.50(a)(3):
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.

Test Procedure:
The EUT was set up for the maximum power with CMW500, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.
Instruments Used: Refer to section 3 for details
Test Mode: Link mode
Test Results: **Please refer to Appendix A1**

5.3 ERP OR EIRP

Test Requirement: FCC 47 CFR Part 2.1046(a)
LTE Band 2: FCC 47 CFR Part 24.232(c)
LTE Band 4: FCC 47 CFR Part 27.50(d)(4)
LTE Band 5: FCC 47 CFR Part 22.913(a)
LTE Band 7& Band 38 & Band 41: FCC 47 CFR Part 27.50(h)(2)
LTE Band 40: FCC 47 CFR Part 27.50(a)(3)

Test Method: KDB 971168 D01v03r01 Section 5.6 & ANSI C63.26-2015

Limit:

FCC 47 CFR Part 22.913(a):
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 47 CFR Part 24.232(c):
Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4):
Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

FCC 47 CFR Part 27.50(h)(2):
Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

FCC 47 CFR Part 27.50(a)(3):
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.

Test Procedure:
According to KDB 412172 D01 Power Approach,

- **ERP or EIRP = $P_T + G_T - L_C$**
- **ERP = EIRP - 2.15**

where

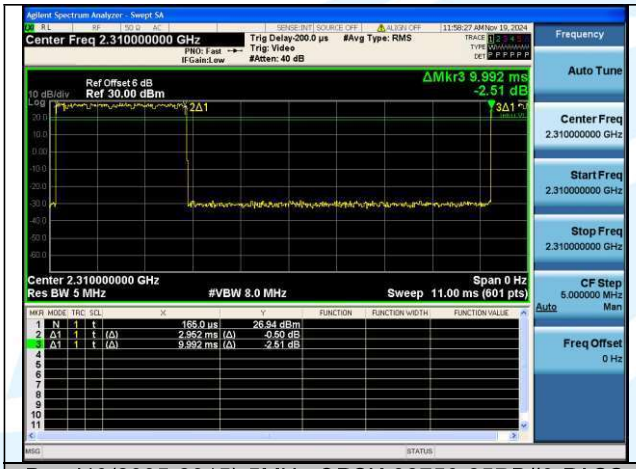
- **P_T** = transmitter output power, expressed in dBW, dBm, or PSD;
- **G_T** = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
- **L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.**

Test Setup: Refer to section 4.2.1 for details.
Instruments Used: Refer to section 3 for details
Test Mode: Link mode
Test Results: Pass
Test Data: **Please refer to Appendix A1**

Note: The maximum ERP/EIRP is calculated from max output power and antenna gain, the antenna gain provided by the customer, and the customer takes all the responsibilities for the accuracy of antenna gain.

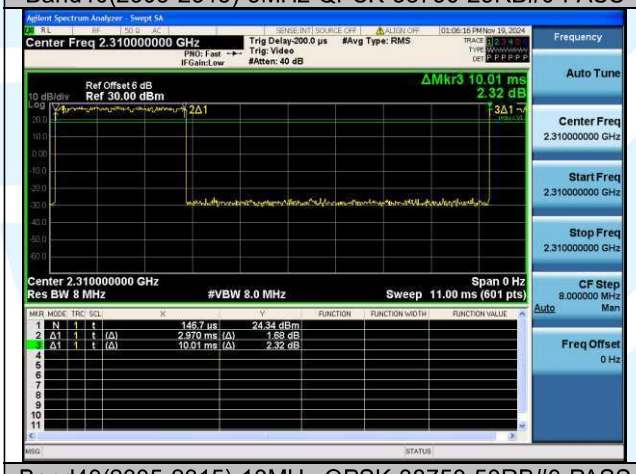
Duty Cycle

Band	Bandwidth	Modulation	Channel	RB Configuration	Result (%)	Verdict
Band40(2305-2315)	5MHz	QPSK	38750	25RB#0	29.54	PASS
Band40(2305-2315)	5MHz	16QAM	38750	25RB#0	29.67	PASS
Band40(2305-2315)	10MHz	QPSK	38750	50RB#0	29.67	PASS
Band40(2305-2315)	10MHz	16QAM	38750	50RB#0	29.50	PASS
Band40(2350-2360)	5MHz	QPSK	39200	25RB#0	29.54	PASS
Band40(2350-2360)	5MHz	16QAM	39200	25RB#0	29.67	PASS
Band40(2350-2360)	10MHz	QPSK	39200	50RB#0	29.72	PASS
Band40(2350-2360)	10MHz	16QAM	39200	50RB#0	29.72	PASS



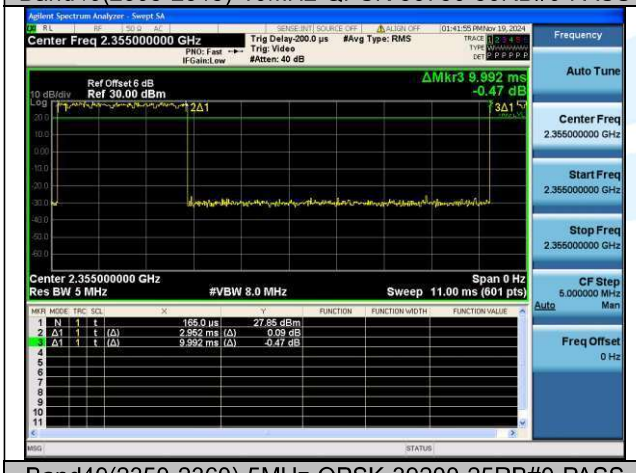
Band40(2305-2315)-5MHz-QPSK-38750-25RB#0-PASS

Band40(2305-2315)-5MHz-16QAM-38750-25RB#0-PASS



Band40(2305-2315)-10MHz-QPSK-38750-50RB#0-PASS

Band40(2305-2315)-10MHz-16QAM-38750-50RB#0-PASS



Band40(2350-2360)-5MHz-QPSK-39200-25RB#0-PASS

Band40(2350-2360)-5MHz-16QAM-39200-25RB#0-PASS

	
Band40(2350-2360)-10MHz-QPSK-39200-50RB#0-PASS	Band40(2350-2360)-10MHz-16QAM-39200-50RB#0-PASS

5.4 PEAK-TO-AVERAGE RATIO

Test Requirement:	**LTE Band 2:** FCC 47 CFR Part 24.232(d) **LTE Band 4:** FCC 47 CFR Part 27.50(d)(5) **LTE Band 5:** FCC 47 CFR Part 22.913(a) **LTE Band 7& Band 38 & Band 41:** FCC 47 CFR Part 27.50(d)(5)
Test Method:	KDB 971168 D01v03r01 Section 5.7
Limit:	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

Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
b) Set the number of counts to a value that stabilizes the measured CCDF curve
c) Record the maximum PAPR level associated with a probability of 0.1 %

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup:	Refer to section 4.2.2 for details.
Instruments Used:	Refer to section 3 for details
Test Mode:	Link mode
Test Results:	Pass
Test Data:	**Please refer to Appendix A2**