TEST REPORT

REPORT NUMBER:I23W00054-LTE Band48 RF

ON

Type of Equipment:	**5G CPE**
Type of Designation:	**PW550, PW571,PW512,JW515, PW550-NA**
Brand Name:	**ATEL**
Manufacturer:	**Asiatelco Technologies Co.**
FCC ID:	**XYO-PW550**

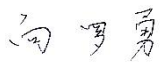
ACCORDING TO

FCC 47 CFR Part 2;FCC 47 CFR Part 96

Chongqing Academy of Information and Communications Technology

Month date, year
October 13, 2023

Signature



Director

Note:
The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

Revision Version

Report Number	Revision	Date
I23W00054-LTE RF	00	2023-10-13

CONTENTS

1. Test Laboratory

1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
Identifier Number:	CN0044
Designation Number:	CN1239
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

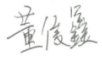
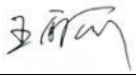
1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	30-60%

1.3. Project data

Testing Start Date:	2023-09-05
Testing End Date:	2023-09-26

1.4. Signature

	2023-10-13
Dong Junxin **(Prepared this test report)**	**Date**
	2023-10-13
Wang Lili **(Reviewed this test report)**	**Date**
	2023-10-13
Xiang Luoyong **Director of the laboratory** **(Approved this test report)**	**Date**

2. Client Information

2.1. Applicant Information

Company Name:	Asiatelco Technologies Co.
Address /Post:	#289 Bisheng Road, Building-8, 3F, Zhang jiang Hi-Tech Park, Pudong, Shanghai, China
City:	Shanghai
Country:	China
Telephone:	N/A
Fax:	N/A
Email:	kwchen@asiatelco.com
Contact Person:	Ella Chen

2.2. Manufacturer Information

Company Name:	Asiatelco Technologies Co.
Address /Post:	#289 Bisheng Road, Building-8, 3F, Zhang jiang Hi-Tech Park, Pudong, Shanghai, China
City:	Shanghai
Country:	China
Telephone:	N/A
Fax:	N/A
Email:	kwchen@asiatelco.com
Contact Person:	Ella Chen

3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	5G CPE
Model name	PW550, PW571,PW512,JW515, PW550-NA
Brand name	ATEL
GSM Frequency Band	N/A
WCDMA Frequency Band	WCDMA:B2/B4/B5
LTE Frequency Band	LTE:B2/4/5/7/12/13/14/17/25/26/30/41/48/66/71
Type of LTE modulation	QPSK/16QAM/64QAM/256QAM
Power Class 2	LTE:B41
Power Class 3	LTE: B2/4/5/7/12/13/14/17/25/26/30/48/66/71
Extreme Temperature	-20/+60℃
Nominal Voltage	24V
Extreme High Voltage	25.2V
Extreme Low Voltage	22.8V

Note: Photographs of EUT are shown in ANNEX A of this test report.
Note: High and low voltage values in extreme condition test are given by manufacturer.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S1	862424050114643	PW55-P1	CPE5_PW550_N0_00_v1.0.2	2023-09-11
S2	862424050062271	PW55-P1	CPE5_PW550_N0_00_v1.0.2	2023-09-05

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Outline of Equipment under Test

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
LTE	48	3550-3700	3550-3700	--

3.4. Internal Identification of AE used during the test

AE ID*	Description	dB*
AE1	RF cable	0.5

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Documents supplied by applicant

PICS/PIXIT, referring to Annex B for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC 47 CFR Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	2021-10-01
FCC 47 CFR Part 96	CITIZENS BROADBAND RADIO SERVICE	2022-10-01

5. Test Equipments Utilized

5.1. RF Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal. Interval	Cal.Due Date
1	Spectrum analyzer	FSQ 26	201137/026	--	--	R&S	1 Year	2024-06-28
2	Spectrum analyzer	FSW26	104280	--	--	R&S	1 Year	2024-06-28
3	DC Power Supply	3303D	801128	--	--	Topward	1 Year	2024-06-28
4	Universal Radio Communication Tester	CMW500	152395	--	--	R&S	1 Year	2024-06-28

5.2. RSE Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal. Interval	Cal.Due Date
1	EMI Test Receiver	ESU40	100307	--	--	R&S	1 Year	2024-06-28
2	TRILOG Broadband Antenna	VULB9163	9163-586	--	--	Schwarzbeck	1 Year	2023-10-29
3	Horn antenna	9120D	1083	--	--	Schwarzbeck	2 Year	2024-12-14
4	Horn antenna	DATE 1152	LM7127	--	--	ETS	2 Year	2024-09-06
5	Horn antenna	DATE 1012	LM5945	--	--	ETS	2 Year	2024-09-06
6	Amplifier1	SCU-08F1	8320027	--	--	R&S	1 Year	2024-06-28
7	Amplifier2	SCU-18F	180093	--	--	R&S	1 Year	2024-06-28

5.3. Climate Chamber

No.	Name	Type	SN	Manufacture	Cal. Interval	Cal.Due Date
1	Climate chamber	SH-241	92010759	--	1 Year	2024-06-28

5.4. Anechoic chamber Vibration table

No.	Name	Type	SN	Manufacture	Cal. Interval	Cal.Due Date
1	Fully-Anechoic Chamber	FAC 5	--	TDK	3 Year	2024-09-22
2	Anechoic Chamber	SAC 10	--	TDK	3 Year	2024-08-26

5.5. Test software

No.	Name	version	SN	Manufacture
1	EMC32	V 10.20.01	--	R&S

6. Test Results

6.1. Summary of Test Results

A brief summary of the tests carried out is shown as following.

FCC Rules	Name of Test	Result
FCC Part 2.1046/96.41(b)	Output Power/EIRP,ERP	PASS
FCC Part 2.1051/96.41(e)	Emission Limit	PASS
FCC Part 96.41(g)	Peak-to-Average Ratio	Refer to report (Report No: SAR/2021/4000901, SUZR/2021/7002001)
FCC Part 2.1049	99%Occupied Bandwidth	Refer to report (Report No: SAR/2021/4000901, SUZR/2021/7002001)
FCC Part 96.41(e)	-26dB Emission Bandwidth	Refer to report (Report No: SAR/2021/4000901, SUZR/2021/7002001)
FCC Part 96.41(e)	Band Edge at antenna terminals	Refer to report (Report No: SAR/2021/4000901, SUZR/2021/7002001)
FCC Part 2.1055	Frequency stability	Refer to report (Report No: SAR/2021/4000901, SUZR/2021/7002001)
FCC Part 2.1057/96.41(e)	Conducted Spurious mission	Refer to report (Report No: SAR/2021/4000901, SUZR/2021/7002001)
Note:The PW550, PW571,PW512,JW515, PW550-NA, manufactured by Asiatelco Technologies Co. is a new product for testing. The RF module inside the product have been certified, FCC ID: ZMOFG360NA. certified on 2021-12-13, Only RF output power, Radiated Spurious Emission is tested for 5G CPE model PW550, PW571,PW512,JW515, PW550-NA in this report, and because of the change of antenna gain, Effective Isotropic Radiated Power/ERP also re-evaluated. Other test items refer to the FG360-NA Module report (Report No.: SAR/2021/4000901 and SUZR/2021/7002001, FCC ID: ZMOFG360NA).		

6.2. Output Power

Specifications:	FCC Part 2.1046/96.41(b)
DUT Serial Number:	S1
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

During the process of testing, the EUT was controlled Rhode & Schwarz Digital Radio.
Communication tester to ensure max power transmission and proper modulation.
This result contains peak output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

6.2.1. Method of Measurements

Method of measurements please refer to KDB971168 D01 v03 clause 5.
The EUT was set up for the max output power with pseudo random data modulation.
The power was measured with Rhode & Schwarz Spectrum Analyzer FSQ(peak).

6.2.2. Test procedures

The transmitter output port was connected to base station.
Set the EUT at maximum power through base station.
Select lowest, middle, and highest channels for each band and different modulation.
Measure maximum average power for other modulation signal.
The transmitter output power was connected to calibrated attenuator, the other end of which was connected to signal analyzer. Transmitter output power was read off the power in dBm. The power outputs at the transmitter antenna port was determined by adding the value of attenuator to the signal analyzer reading.

6.2.3. Limit

96.41(b) specifies that the Maximum EIRP for End User Device must not exceed 23(dBm/10 megahertz)

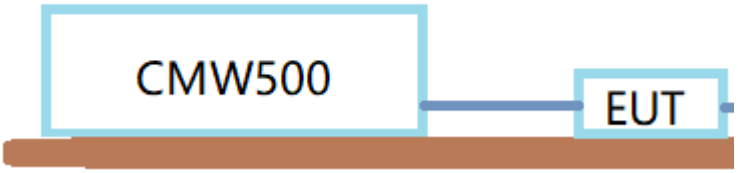
Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	0.62dB (k=2)

6.2.4. Test Condition

RBW	VBW	Sweep time	Span
3MHz	10MHz	Auto	50MHz

6.2.5. Test Setup



6.2.6. Measurement results

Band	Frequency (MHz)	Band Width	RB size/ offset	Power (dBm/10 megahertz) -QPSK	Power (dBm/10 megahertz) -16QAM	Power (dBm/10 megahertz) -64QAM	Power (dBm/10 megahertz) -256QAM
TDD48	3552.5	5	One Rb High	20.28	19.82	18.73	15.98
TDD48	3552.5	5	One Rb Low	20.32	19.88	18.77	16.08
TDD48	3552.5	5	One Rb Middle	20.3	19.87	18.76	15.99
TDD48	3552.5	5	Half Rb Low	19.49	18.83	17.82	15.73
TDD48	3552.5	5	Half Rb Middle	19.49	18.81	17.82	15.74
TDD48	3552.5	5	Half Rb High	19.45	18.74	17.77	15.66
TDD48	3552.5	5	Fullrb	19.47	18.82	17.8	15.78
TDD48	3555	10	One Rb High	20.15	19.58	18.87	15.42
TDD48	3555	10	One Rb Low	20.38	19.79	19.09	15.63
TDD48	3555	10	One Rb Middle	20.34	19.7	19.04	15.57
TDD48	3555	10	Half Rb Low	19.44	18.81	17.73	15.74
TDD48	3555	10	Half Rb Middle	19.43	18.79	17.73	15.72
TDD48	3555	10	Half Rb High	19.34	18.72	17.65	15.64
TDD48	3555	10	Fullrb	19.4	18.72	17.71	15.62
TDD48	3557.5	15	One Rb High	20.03	19.48	18.76	15.34
TDD48	3557.5	15	One Rb Low	20.27	19.74	19.05	15.56
TDD48	3557.5	15	One Rb Middle	20.2	19.64	18.93	15.48

Band	Frequency (MHz)	Band Width	RB size/ offset	Power (dBm/10 megahertz) -QPSK	Power (dBm/10 megahertz) -16QAM	Power (dBm/10 megahertz) -64QAM	Power (dBm/10 megahertz) -256QAM
TDD48	3557.5	15	Half Rb Low	20.3	15.57	15.59	15.58
TDD48	3557.5	15	Half Rb Middle	20.3	15.58	15.58	15.58
TDD48	3557.5	15	Half Rb High	20.03	15.33	15.32	15.34
TDD48	3557.5	15	Fullrb	19.31	18.66	17.61	15.58
TDD48	3560	20	One Rb High	20	19.58	18.46	15.63
TDD48	3560	20	One Rb Low	20.16	19.74	18.62	15.79
TDD48	3560	20	One Rb Middle	20.06	19.61	18.48	15.65
TDD48	3560	20	Half Rb Low	19.33	18.72	17.66	15.61
TDD48	3560	20	Half Rb Middle	19.33	18.72	17.65	15.61
TDD48	3560	20	Half Rb High	19.24	18.6	17.54	15.5
TDD48	3560	20	Fullrb	19.28	18.61	17.58	15.56
TDD48	3625	5	One Rb High	20.83	20.18	19.31	16.54
TDD48	3625	5	One Rb Low	20.7	20.07	19.16	16.42
TDD48	3625	5	One Rb Middle	20.77	20.15	19.27	16.51
TDD48	3625	5	Half Rb Low	19.66	19.23	18.27	16.18
TDD48	3625	5	Half Rb Middle	19.66	19.24	18.27	16.18
TDD48	3625	5	Half Rb High	19.68	19.23	18.26	16.19
TDD48	3625	5	Fullrb	19.67	19.25	18.25	16.24
TDD48	3625	10	One Rb High	20.77	20.37	19.2	16.42
TDD48	3625	10	One Rb Low	20.51	20.11	18.95	16.16
TDD48	3625	10	One Rb Middle	20.81	20.35	19.18	16.43
TDD48	3625	10	Half Rb Low	19.61	19.16	18.2	16.14
TDD48	3625	10	Half Rb Middle	19.61	19.18	18.15	16.15

Band	Frequency (MHz)	Band Width	RB size/ offset	Power (dBm/10 megahertz) -QPSK	Power (dBm/10 megahertz) -16QAM	Power (dBm/10 megahertz) -64QAM	Power (dBm/10 megahertz) -256QAM
TDD48	3625	10	Half Rb High	19.74	19.32	18.32	16.27
TDD48	3625	10	Fullrb	19.68	19.23	18.21	16.23
TDD48	3625	15	One Rb High	20.75	20.35	19.21	16.45
TDD48	3625	15	One Rb Low	20.33	19.92	18.8	15.99
TDD48	3625	15	One Rb Middle	20.72	20.32	19.16	16.4
TDD48	3625	15	Half Rb Low	20.36	15.99	16.03	16.03
TDD48	3625	15	Half Rb Middle	20.35	16.02	15.98	16.03
TDD48	3625	15	Half Rb High	20.75	16.44	16.43	16.43
TDD48	3625	15	Fullrb	19.64	19.18	18.17	16.15
TDD48	3625	20	One Rb High	20.72	20.28	19.63	16.52
TDD48	3625	20	One Rb Low	20.17	19.74	19.12	16.01
TDD48	3625	20	One Rb Middle	20.73	20.29	19.62	16.54
TDD48	3625	20	Half Rb Low	19.5	19.09	18.07	16.02
TDD48	3625	20	Half Rb Middle	19.52	19.09	18.07	16.04
TDD48	3625	20	Half Rb High	19.75	19.31	18.3	16.25
TDD48	3625	20	Fullrb	19.63	19.18	18.16	16.14
TDD48	3697.5	5	One Rb High	21.1	20.54	19.92	16.81
TDD48	3697.5	5	One Rb Low	21.03	20.52	19.86	16.77
TDD48	3697.5	5	One Rb Middle	21.07	20.52	19.86	16.77
TDD48	3697.5	5	Half Rb Low	20.05	19.58	18.6	16.47
TDD48	3697.5	5	Half Rb Middle	20.06	19.57	18.6	16.47
TDD48	3697.5	5	Half Rb High	20.03	19.56	18.59	16.46
TDD48	3697.5	5	Fullrb	20.06	19.6	18.57	16.46

Band	Frequency (MHz)	Band Width	RB size/ offset	Power (dBm/10 megahertz) -QPSK	Power (dBm/10 megahertz) -16QAM	Power (dBm/10 megahertz) -64QAM	Power (dBm/10 megahertz) -256QAM
TDD48	3695	10	One Rb High	21.09	20.34	19.82	16.38
TDD48	3695	10	One Rb Low	21.01	20.28	19.78	16.31
TDD48	3695	10	One Rb Middle	21.05	20.31	19.84	16.37
TDD48	3695	10	Half Rb Low	19.93	19.54	18.45	16.46
TDD48	3695	10	Half Rb Middle	19.93	19.53	18.46	16.46
TDD48	3695	10	Half Rb High	19.98	19.58	18.5	16.48
TDD48	3695	10	Fullrb	20.02	19.54	18.51	16.45
TDD48	3692.5	15	One Rb High	20.99	20.23	19.81	16.31
TDD48	3692.5	15	One Rb Low	20.95	20.28	19.79	16.31
TDD48	3692.5	15	One Rb Middle	20.97	20.33	19.81	16.32
TDD48	3692.5	15	Half Rb Low	20.94	16.28	16.28	16.28
TDD48	3692.5	15	Half Rb Middle	20.94	16.28	16.28	16.31
TDD48	3692.5	15	Half Rb High	20.97	16.32	16.31	16.32
TDD48	3692.5	15	Fullrb	19.98	19.53	18.48	16.47
TDD48	3690	20	One Rb High	20.84	20.27	19.32	16.5
TDD48	3690	20	One Rb Low	20.84	20.27	19.36	16.52
TDD48	3690	20	One Rb Middle	20.92	20.38	19.4	16.57
TDD48	3690	20	Half Rb Low	19.95	19.57	18.52	16.46
TDD48	3690	20	Half Rb Middle	19.94	19.55	18.54	16.45
TDD48	3690	20	Half Rb High	19.91	19.52	18.47	16.42
TDD48	3690	20	Fullrb	19.93	19.48	18.48	16.44

6.2.7. EIRP

Maximum of Antenna Gain:

No.	Item(s)	Antenna	Data(dBi)
1	48	ANT6	1.84
Note1: The data of antenna gain is based on PW550-NA2 Technical Operation Description and PW550-NA2 Antenna datasheet provided by the manufacturer. Note2: The EIRP is calculated based on the maximum antenna gain.			

LTE

QPSK

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-QPSK	ERP(dBm/10 megahertz)-QPSK
TDD48	3552.5	5	One Rb High	22.12	19.97
TDD48	3552.5	5	One Rb Low	22.16	20.01
TDD48	3552.5	5	One Rb Middle	22.14	19.99
TDD48	3552.5	5	Half Rb Low	21.33	19.18
TDD48	3552.5	5	Half Rb Middle	21.33	19.18
TDD48	3552.5	5	Half Rb High	21.29	19.14
TDD48	3552.5	5	Fullrb	21.31	19.16
TDD48	3555	10	One Rb High	21.99	19.84
TDD48	3555	10	One Rb Low	22.22	20.07
TDD48	3555	10	One Rb Middle	22.18	20.03
TDD48	3555	10	Half Rb Low	21.28	19.13
TDD48	3555	10	Half Rb Middle	21.27	19.12
TDD48	3555	10	Half Rb High	21.18	19.03
TDD48	3555	10	Fullrb	21.24	19.09
TDD48	3557.5	15	One Rb High	21.87	19.72
TDD48	3557.5	15	One Rb Low	22.11	19.96
TDD48	3557.5	15	One Rb Middle	22.04	19.89

TDD48	3557.5	15	Half Rb Low	22.14	19.99
TDD48	3557.5	15	Half Rb Middle	22.14	19.99
TDD48	3557.5	15	Half Rb High	21.87	19.72
TDD48	3557.5	15	Fullrb	21.15	19
TDD48	3560	20	One Rb High	21.84	19.69
TDD48	3560	20	One Rb Low	22	19.85
TDD48	3560	20	One Rb Middle	21.9	19.75
TDD48	3560	20	Half Rb Low	21.17	19.02
TDD48	3560	20	Half Rb Middle	21.17	19.02
TDD48	3560	20	Half Rb High	21.08	18.93
TDD48	3560	20	Fullrb	21.12	18.97
TDD48	3625	5	One Rb High	22.67	20.52
TDD48	3625	5	One Rb Low	22.54	20.39
TDD48	3625	5	One Rb Middle	22.61	20.46
TDD48	3625	5	Half Rb Low	21.5	19.35
TDD48	3625	5	Half Rb Middle	21.5	19.35
TDD48	3625	5	Half Rb High	21.52	19.37
TDD48	3625	5	Fullrb	21.51	19.36
TDD48	3625	10	One Rb High	22.61	20.46
TDD48	3625	10	One Rb Low	22.35	20.2
TDD48	3625	10	One Rb Middle	22.65	20.5
TDD48	3625	10	Half Rb Low	21.45	19.3
TDD48	3625	10	Half Rb Middle	21.45	19.3
TDD48	3625	10	Half Rb High	21.58	19.43
TDD48	3625	10	Fullrb	21.52	19.37

TDD48	3625	15	One Rb High	22.59	20.44
TDD48	3625	15	One Rb Low	22.17	20.02
TDD48	3625	15	One Rb Middle	22.56	20.41
TDD48	3625	15	Half Rb Low	22.2	20.05
TDD48	3625	15	Half Rb Middle	22.19	20.04
TDD48	3625	15	Half Rb High	22.59	20.44
TDD48	3625	15	Fullrb	21.48	19.33
TDD48	3625	20	One Rb High	22.56	20.41
TDD48	3625	20	One Rb Low	22.01	19.86
TDD48	3625	20	One Rb Middle	22.57	20.42
TDD48	3625	20	Half Rb Low	21.34	19.19
TDD48	3625	20	Half Rb Middle	21.36	19.21
TDD48	3625	20	Half Rb High	21.59	19.44
TDD48	3625	20	Fullrb	21.47	19.32
TDD48	3697.5	5	One Rb High	22.94	20.79
TDD48	3697.5	5	One Rb Low	22.87	20.72
TDD48	3697.5	5	One Rb Middle	22.91	20.76
TDD48	3697.5	5	Half Rb Low	21.89	19.74
TDD48	3697.5	5	Half Rb Middle	21.9	19.75
TDD48	3697.5	5	Half Rb High	21.87	19.72
TDD48	3697.5	5	Fullrb	21.9	19.75
TDD48	3695	10	One Rb High	22.93	20.78
TDD48	3695	10	One Rb Low	22.85	20.7
TDD48	3695	10	One Rb Middle	22.89	20.74
TDD48	3695	10	Half Rb Low	21.77	19.62

TDD48	3695	10	Half Rb Middle	21.77	19.62
TDD48	3695	10	Half Rb High	21.82	19.67
TDD48	3695	10	Fullrb	21.86	19.71
TDD48	3692.5	15	One Rb High	22.83	20.68
TDD48	3692.5	15	One Rb Low	22.79	20.64
TDD48	3692.5	15	One Rb Middle	22.81	20.66
TDD48	3692.5	15	Half Rb Low	22.78	20.63
TDD48	3692.5	15	Half Rb Middle	22.78	20.63
TDD48	3692.5	15	Half Rb High	22.81	20.66
TDD48	3692.5	15	Fullrb	21.82	19.67
TDD48	3690	20	One Rb High	22.68	20.53
TDD48	3690	20	One Rb Low	22.68	20.53
TDD48	3690	20	One Rb Middle	22.76	20.61
TDD48	3690	20	Half Rb Low	21.79	19.64
TDD48	3690	20	Half Rb Middle	21.78	19.63
TDD48	3690	20	Half Rb High	21.75	19.6
TDD48	3690	20	Fullrb	21.77	19.62

16QAM

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-16AM	ERP(dBm/10 megahertz)-16QAM
TDD48	3552.5	5	One Rb High	21.66	19.51
TDD48	3552.5	5	One Rb Low	21.72	19.57
TDD48	3552.5	5	One Rb Middle	21.71	19.56
TDD48	3552.5	5	Half Rb Low	20.67	18.52
TDD48	3552.5	5	Half Rb Middle	20.65	18.5
TDD48	3552.5	5	Half Rb High	20.58	18.43
TDD48	3552.5	5	Fullrb	20.66	18.51
TDD48	3555	10	One Rb High	21.42	19.27
TDD48	3555	10	One Rb Low	21.63	19.48
TDD48	3555	10	One Rb Middle	21.54	19.39

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-16AM	ERP(dBm/10 megahertz)-16QAM
TDD48	3555	10	Half Rb Low	20.65	18.5
TDD48	3555	10	Half Rb Middle	20.63	18.48
TDD48	3555	10	Half Rb High	20.56	18.41
TDD48	3555	10	Fullrb	20.56	18.41
TDD48	3557.5	15	One Rb High	21.32	19.17
TDD48	3557.5	15	One Rb Low	21.58	19.43
TDD48	3557.5	15	One Rb Middle	21.48	19.33
TDD48	3557.5	15	Half Rb Low	17.41	15.26
TDD48	3557.5	15	Half Rb Middle	17.42	15.27
TDD48	3557.5	15	Half Rb High	17.17	15.02
TDD48	3557.5	15	Fullrb	20.5	18.35
TDD48	3560	20	One Rb High	21.42	19.27
TDD48	3560	20	One Rb Low	21.58	19.43
TDD48	3560	20	One Rb Middle	21.45	19.3
TDD48	3560	20	Half Rb Low	20.56	18.41
TDD48	3560	20	Half Rb Middle	20.56	18.41
TDD48	3560	20	Half Rb High	20.44	18.29
TDD48	3560	20	Fullrb	20.45	18.3
TDD48	3625	5	One Rb High	22.02	19.87
TDD48	3625	5	One Rb Low	21.91	19.76
TDD48	3625	5	One Rb Middle	21.99	19.84
TDD48	3625	5	Half Rb Low	21.07	18.92
TDD48	3625	5	Half Rb Middle	21.08	18.93
TDD48	3625	5	Half Rb High	21.07	18.92
TDD48	3625	5	Fullrb	21.09	18.94
TDD48	3625	10	One Rb High	22.21	20.06
TDD48	3625	10	One Rb Low	21.95	19.8
TDD48	3625	10	One Rb Middle	22.19	20.04
TDD48	3625	10	Half Rb Low	21	18.85
TDD48	3625	10	Half Rb Middle	21.02	18.87
TDD48	3625	10	Half Rb High	21.16	19.01
TDD48	3625	10	Fullrb	21.07	18.92
TDD48	3625	15	One Rb High	22.19	20.04
TDD48	3625	15	One Rb Low	21.76	19.61
TDD48	3625	15	One Rb Middle	22.16	20.01
TDD48	3625	15	Half Rb Low	17.83	15.68
TDD48	3625	15	Half Rb Middle	17.86	15.71
TDD48	3625	15	Half Rb High	18.28	16.13
TDD48	3625	15	Fullrb	21.02	18.87
TDD48	3625	20	One Rb High	22.12	19.97

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-16AM	ERP(dBm/10 megahertz)-16QAM
TDD48	3625	20	One Rb Low	21.58	19.43
TDD48	3625	20	One Rb Middle	22.13	19.98
TDD48	3625	20	Half Rb Low	20.93	18.78
TDD48	3625	20	Half Rb Middle	20.93	18.78
TDD48	3625	20	Half Rb High	21.15	19
TDD48	3625	20	Fullrb	21.02	18.87
TDD48	3697.5	5	One Rb High	22.38	20.23
TDD48	3697.5	5	One Rb Low	22.36	20.21
TDD48	3697.5	5	One Rb Middle	22.36	20.21
TDD48	3697.5	5	Half Rb Low	21.42	19.27
TDD48	3697.5	5	Half Rb Middle	21.41	19.26
TDD48	3697.5	5	Half Rb High	21.4	19.25
TDD48	3697.5	5	Fullrb	21.44	19.29
TDD48	3695	10	One Rb High	22.18	20.03
TDD48	3695	10	One Rb Low	22.12	19.97
TDD48	3695	10	One Rb Middle	22.15	20
TDD48	3695	10	Half Rb Low	21.38	19.23
TDD48	3695	10	Half Rb Middle	21.37	19.22
TDD48	3695	10	Half Rb High	21.42	19.27
TDD48	3695	10	Fullrb	21.38	19.23
TDD48	3692.5	15	One Rb High	22.07	19.92
TDD48	3692.5	15	One Rb Low	22.12	19.97
TDD48	3692.5	15	One Rb Middle	22.17	20.02
TDD48	3692.5	15	Half Rb Low	18.12	15.97
TDD48	3692.5	15	Half Rb Middle	18.12	15.97
TDD48	3692.5	15	Half Rb High	18.16	16.01
TDD48	3692.5	15	Fullrb	21.37	19.22
TDD48	3690	20	One Rb High	22.11	19.96
TDD48	3690	20	One Rb Low	22.11	19.96
TDD48	3690	20	One Rb Middle	22.22	20.07
TDD48	3690	20	Half Rb Low	21.41	19.26
TDD48	3690	20	Half Rb Middle	21.39	19.24
TDD48	3690	20	Half Rb High	21.36	19.21
TDD48	3690	20	Fullrb	21.32	19.17

64QAM

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-64QAM	ERP(dBm/10 megahertz)-64QAM
TDD48	3552.5	5	One Rb High	20.57	18.42
TDD48	3552.5	5	One Rb Low	20.61	18.46

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-64QAM	ERP(dBm/10 megahertz)-64QAM
TDD48	3552.5	5	One Rb Middle	20.6	18.45
TDD48	3552.5	5	Half Rb Low	19.66	17.51
TDD48	3552.5	5	Half Rb Middle	19.66	17.51
TDD48	3552.5	5	Half Rb High	19.61	17.46
TDD48	3552.5	5	Fullrb	19.64	17.49
TDD48	3555	10	One Rb High	20.71	18.56
TDD48	3555	10	One Rb Low	20.93	18.78
TDD48	3555	10	One Rb Middle	20.88	18.73
TDD48	3555	10	Half Rb Low	19.57	17.42
TDD48	3555	10	Half Rb Middle	19.57	17.42
TDD48	3555	10	Half Rb High	19.49	17.34
TDD48	3555	10	Fullrb	19.55	17.4
TDD48	3557.5	15	One Rb High	20.6	18.45
TDD48	3557.5	15	One Rb Low	20.89	18.74
TDD48	3557.5	15	One Rb Middle	20.77	18.62
TDD48	3557.5	15	Half Rb Low	17.43	15.28
TDD48	3557.5	15	Half Rb Middle	17.42	15.27
TDD48	3557.5	15	Half Rb High	17.16	15.01
TDD48	3557.5	15	Fullrb	19.45	17.3
TDD48	3560	20	One Rb High	20.3	18.15
TDD48	3560	20	One Rb Low	20.46	18.31
TDD48	3560	20	One Rb Middle	20.32	18.17
TDD48	3560	20	Half Rb Low	19.5	17.35
TDD48	3560	20	Half Rb Middle	19.49	17.34
TDD48	3560	20	Half Rb High	19.38	17.23
TDD48	3560	20	Fullrb	19.42	17.27
TDD48	3625	5	One Rb High	21.15	19
TDD48	3625	5	One Rb Low	21	18.85
TDD48	3625	5	One Rb Middle	21.11	18.96
TDD48	3625	5	Half Rb Low	20.11	17.96
TDD48	3625	5	Half Rb Middle	20.11	17.96
TDD48	3625	5	Half Rb High	20.1	17.95
TDD48	3625	5	Fullrb	20.09	17.94
TDD48	3625	10	One Rb High	21.04	18.89
TDD48	3625	10	One Rb Low	20.79	18.64
TDD48	3625	10	One Rb Middle	21.02	18.87
TDD48	3625	10	Half Rb Low	20.04	17.89
TDD48	3625	10	Half Rb Middle	19.99	17.84
TDD48	3625	10	Half Rb High	20.16	18.01
TDD48	3625	10	Fullrb	20.05	17.9

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-64QAM	ERP(dBm/10 megahertz)-64QAM
TDD48	3625	15	One Rb High	21.05	18.9
TDD48	3625	15	One Rb Low	20.64	18.49
TDD48	3625	15	One Rb Middle	21	18.85
TDD48	3625	15	Half Rb Low	17.87	15.72
TDD48	3625	15	Half Rb Middle	17.82	15.67
TDD48	3625	15	Half Rb High	18.27	16.12
TDD48	3625	15	Fullrb	20.01	17.86
TDD48	3625	20	One Rb High	21.47	19.32
TDD48	3625	20	One Rb Low	20.96	18.81
TDD48	3625	20	One Rb Middle	21.46	19.31
TDD48	3625	20	Half Rb Low	19.91	17.76
TDD48	3625	20	Half Rb Middle	19.91	17.76
TDD48	3625	20	Half Rb High	20.14	17.99
TDD48	3625	20	Fullrb	20	17.85
TDD48	3697.5	5	One Rb High	21.76	19.61
TDD48	3697.5	5	One Rb Low	21.7	19.55
TDD48	3697.5	5	One Rb Middle	21.7	19.55
TDD48	3697.5	5	Half Rb Low	20.44	18.29
TDD48	3697.5	5	Half Rb Middle	20.44	18.29
TDD48	3697.5	5	Half Rb High	20.43	18.28
TDD48	3697.5	5	Fullrb	20.41	18.26
TDD48	3695	10	One Rb High	21.66	19.51
TDD48	3695	10	One Rb Low	21.62	19.47
TDD48	3695	10	One Rb Middle	21.68	19.53
TDD48	3695	10	Half Rb Low	20.29	18.14
TDD48	3695	10	Half Rb Middle	20.3	18.15
TDD48	3695	10	Half Rb High	20.34	18.19
TDD48	3695	10	Fullrb	20.35	18.2
TDD48	3692.5	15	One Rb High	21.65	19.5
TDD48	3692.5	15	One Rb Low	21.63	19.48
TDD48	3692.5	15	One Rb Middle	21.65	19.5
TDD48	3692.5	15	Half Rb Low	18.12	15.97
TDD48	3692.5	15	Half Rb Middle	18.12	15.97
TDD48	3692.5	15	Half Rb High	18.15	16
TDD48	3692.5	15	Fullrb	20.32	18.17
TDD48	3690	20	One Rb High	21.16	19.01
TDD48	3690	20	One Rb Low	21.2	19.05
TDD48	3690	20	One Rb Middle	21.24	19.09
TDD48	3690	20	Half Rb Low	20.36	18.21
TDD48	3690	20	Half Rb Middle	20.38	18.23

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-64QAM	ERP(dBm/10 megahertz)-64QAM
TDD48	3690	20	Half Rb High	20.31	18.16
TDD48	3690	20	Fullrb	20.32	18.17

256QAM

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-256QAM	ERP(dBm/10 megahertz)-256QAM
TDD48	3552.5	5	One Rb High	17.82	15.67
TDD48	3552.5	5	One Rb Low	17.92	15.77
TDD48	3552.5	5	One Rb Middle	17.83	15.68
TDD48	3552.5	5	Half Rb Low	17.57	15.42
TDD48	3552.5	5	Half Rb Middle	17.58	15.43
TDD48	3552.5	5	Half Rb High	17.5	15.35
TDD48	3552.5	5	Fullrb	17.62	15.47
TDD48	3555	10	One Rb High	17.26	15.11
TDD48	3555	10	One Rb Low	17.47	15.32
TDD48	3555	10	One Rb Middle	17.41	15.26
TDD48	3555	10	Half Rb Low	17.58	15.43
TDD48	3555	10	Half Rb Middle	17.56	15.41
TDD48	3555	10	Half Rb High	17.48	15.33
TDD48	3555	10	Fullrb	17.46	15.31
TDD48	3557.5	15	One Rb High	17.18	15.03
TDD48	3557.5	15	One Rb Low	17.4	15.25
TDD48	3557.5	15	One Rb Middle	17.32	15.17
TDD48	3557.5	15	Half Rb Low	17.42	15.27
TDD48	3557.5	15	Half Rb Middle	17.42	15.27
TDD48	3557.5	15	Half Rb High	17.18	15.03
TDD48	3557.5	15	Fullrb	17.42	15.27
TDD48	3560	20	One Rb High	17.47	15.32
TDD48	3560	20	One Rb Low	17.63	15.48
TDD48	3560	20	One Rb Middle	17.49	15.34
TDD48	3560	20	Half Rb Low	17.45	15.3
TDD48	3560	20	Half Rb Middle	17.45	15.3
TDD48	3560	20	Half Rb High	17.34	15.19
TDD48	3560	20	Fullrb	17.4	15.25
TDD48	3625	5	One Rb High	18.38	16.23
TDD48	3625	5	One Rb Low	18.26	16.11
TDD48	3625	5	One Rb Middle	18.35	16.2
TDD48	3625	5	Half Rb Low	18.02	15.87
TDD48	3625	5	Half Rb Middle	18.02	15.87
TDD48	3625	5	Half Rb High	18.03	15.88

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-256QAM	ERP(dBm/10 megahertz)-256QAM
TDD48	3625	5	Fullrb	18.08	15.93
TDD48	3625	10	One Rb High	18.26	16.11
TDD48	3625	10	One Rb Low	18	15.85
TDD48	3625	10	One Rb Middle	18.27	16.12
TDD48	3625	10	Half Rb Low	17.98	15.83
TDD48	3625	10	Half Rb Middle	17.99	15.84
TDD48	3625	10	Half Rb High	18.11	15.96
TDD48	3625	10	Fullrb	18.07	15.92
TDD48	3625	15	One Rb High	18.29	16.14
TDD48	3625	15	One Rb Low	17.83	15.68
TDD48	3625	15	One Rb Middle	18.24	16.09
TDD48	3625	15	Half Rb Low	17.87	15.72
TDD48	3625	15	Half Rb Middle	17.87	15.72
TDD48	3625	15	Half Rb High	18.27	16.12
TDD48	3625	15	Fullrb	17.99	15.84
TDD48	3625	20	One Rb High	18.36	16.21
TDD48	3625	20	One Rb Low	17.85	15.7
TDD48	3625	20	One Rb Middle	18.38	16.23
TDD48	3625	20	Half Rb Low	17.86	15.71
TDD48	3625	20	Half Rb Middle	17.88	15.73
TDD48	3625	20	Half Rb High	18.09	15.94
TDD48	3625	20	Fullrb	17.98	15.83
TDD48	3697.5	5	One Rb High	18.65	16.5
TDD48	3697.5	5	One Rb Low	18.61	16.46
TDD48	3697.5	5	One Rb Middle	18.61	16.46
TDD48	3697.5	5	Half Rb Low	18.31	16.16
TDD48	3697.5	5	Half Rb Middle	18.31	16.16
TDD48	3697.5	5	Half Rb High	18.3	16.15
TDD48	3697.5	5	Fullrb	18.3	16.15
TDD48	3695	10	One Rb High	18.22	16.07
TDD48	3695	10	One Rb Low	18.15	16
TDD48	3695	10	One Rb Middle	18.21	16.06
TDD48	3695	10	Half Rb Low	18.3	16.15
TDD48	3695	10	Half Rb Middle	18.3	16.15
TDD48	3695	10	Half Rb High	18.32	16.17
TDD48	3695	10	Fullrb	18.29	16.14
TDD48	3692.5	15	One Rb High	18.15	16
TDD48	3692.5	15	One Rb Low	18.15	16
TDD48	3692.5	15	One Rb Middle	18.16	16.01
TDD48	3692.5	15	Half Rb Low	18.12	15.97

Band	Frequency (MHz)	Band Width	RB size/offset	EIRP(dBm/10 megahertz)-256QAM	ERP(dBm/10 megahertz)-256QAM
TDD48	3692.5	15	Half Rb Middle	18.15	16
TDD48	3692.5	15	Half Rb High	18.16	16.01
TDD48	3692.5	15	Fullrb	18.31	16.16
TDD48	3690	20	One Rb High	18.34	16.19
TDD48	3690	20	One Rb Low	18.36	16.21
TDD48	3690	20	One Rb Middle	18.41	16.26
TDD48	3690	20	Half Rb Low	18.3	16.15
TDD48	3690	20	Half Rb Middle	18.29	16.14
TDD48	3690	20	Half Rb High	18.26	16.11
TDD48	3690	20	Fullrb	18.28	16.13

ANALYZER SETTINGS:

RBW = VBW = 8MHz for occupied bandwdiths equal to or less than 5MHz.

RBW = VBW = 20MHz for occupied bandwidths equal to or greater than 10MHz.

6.3. EMISSION LIMIT

Specifications:	FCC Part 2.1051/96.41(e)
DUT Serial Number:	S2
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

6.3.1. Measurement Method

The measurements procedures in TIA-603E-2016 are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in 2.1051/96.41(e).

6.3.2. The procedure of radiated spurious emissions is as follows

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10thharmonic were measured with peak detector.

2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.

In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
4. The Path loss (Ppl) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (Ga) should be recorded after test.
A amplifier should be connected in for the test.
The Path loss (Ppl) is the summation of the cable loss .
The measurement results are obtained as described below:
Power(EIRP)=PMea- Ppl+ Ga
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15

dBi) and known input power.

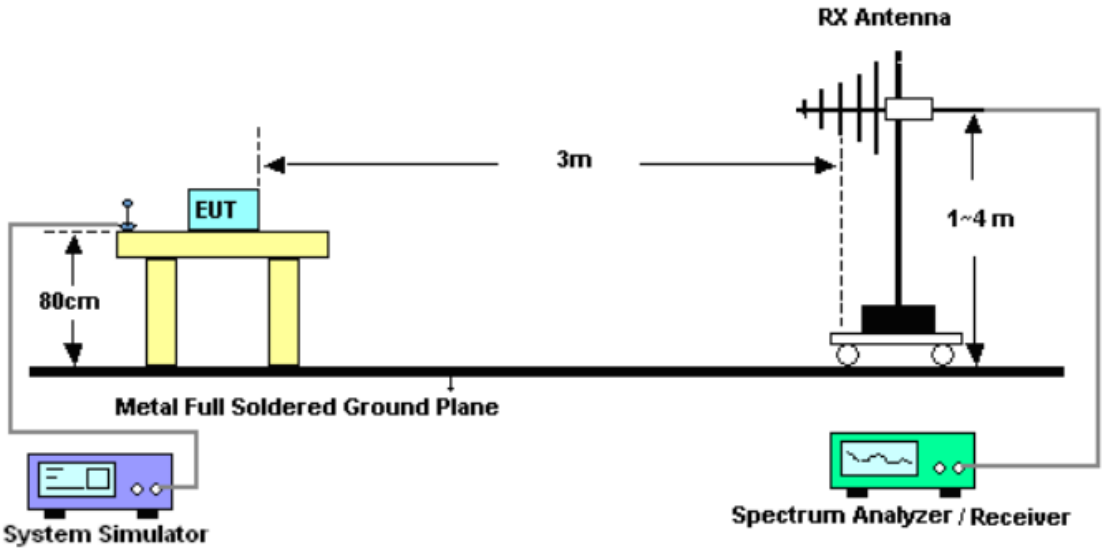
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi

6.3.3. Measurement Limit

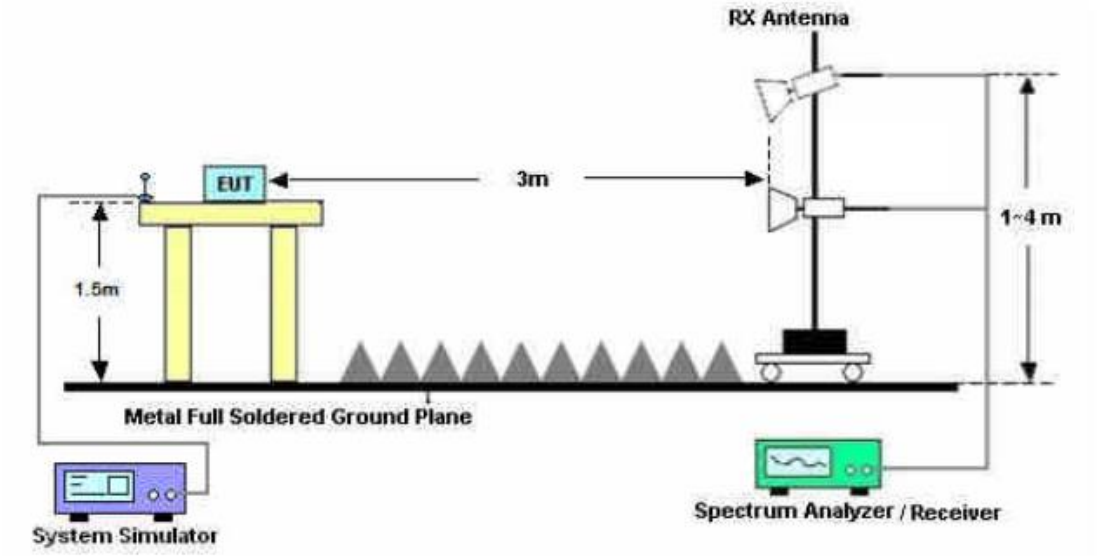
96.41(e)(1) General protection levels.
(i) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0 – 10 megahertz above the upper SAS-assigned channel edge and within 0 – 10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.
(ii) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed −13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed −25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.
(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

6.3.4. Test Setup

For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	30MHz-150MHz 3.82 dB (k=2) 150MHz-1000MHz 3.97 dB (k=2) 1000MHz-3000MHz 3.09 dB (k=2) 3000MHz-6000MHz 3.29 dB (k=2) 6000MHz-18000MHz 3.91 dB (k=2) 18000MHz-26000MHz 4.60 dB (k=2) 26000MHz-40000MHz 4.77 dB (k=2)

6.3.5. LTE Measurement Results

BAND	Result	
B48	Low	Pass
	Middle	Pass
	High	Pass

RSE-LTE48-H

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
4380.1	-45.07	7.3	8.7	-43.67	-13	V
5837.7	-42.84	8.4	10.2	-41.04	-13	H
7295.0	-39.17	9.6	11.4	-37.37	-13	H
10378.0	-47.5	11.6	12.3	-46.8	-13	H
13983.0	-44.68	13.7	12.3	-46.08	-13	H
17700.0	-34.66	15.8	12.3	-38.16	-13	V

RSE-LTE48-L

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
5177.7	-42.39	8.0	9.4	-40.99	-13	H
7181.1	-38.98	9.5	11.4	-37.08	-13	V
9280.0	-51.01	10.7	12.7	-49.01	-13	V
10377.0	-47.56	11.6	12.3	-46.86	-13	H
13907.0	-44.99	13.5	12.3	-46.19	-13	H
17930.0	-32.93	16.2	12.3	-36.83	-13	V

RSE-LTE48-M

Frequency (MHz)	PMea (dBm)	Pcl (dBm)	Ga (dBd)	Peak ERP (dBm)	Limit （dBm）	Polarization
4631.2	-44	7.5	9.0	-42.5	-13	V
7234.8	-39.59	9.6	11.4	-37.79	-13	V

9207.0	-50.63	10.5	12.6	-48.53	-13	V
10984.0	-46.11	12.0	12.3	-45.81	-13	H
14613.0	-42.96	14.0	12.3	-44.66	-13	H
17803.0	-34.79	16.0	12.3	-38.49	-13	V

Annex A EUT Photos

See the document"I23W00054-External Photos".
See the document"I23W00054-Internal Photos".

Annex B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

*****END OF REPORT*****