



FCC TEST REPORT

**Test report
On Behalf of
Smart Eye AB (Paul)
For
Driver Monitoring System
Model No.: AIS**

FCC ID: 2BADP-AIS

Prepared for : Smart Eye AB (Paul)
Forsta Langgatan 28B,413 27 Goteborg, Sweden

Prepared By : Shenzhen Tongzhou Testing Co.,Ltd
1th Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street,
Longhua, Shenzhen, China

Date of Test: 2023/3/4 ~ 2023/3/28

Date of Report: 2023/3/29

Report Number: TZ230204021-E2

The test report apply only to the specific sample(s) tested under stated test conditions
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

**TEST RESULT CERTIFICATION****Applicant's name** : **Smart Eye AB (Paul)**

Address..... : Forsta Langgatan 28B,413 27 Goteborg, Sweden

Manufacture's Name : **Tung Thih Electron(Xiamen) Co., Ltd.**

Address..... : 1-17, ZhaoGang Road, Xiangbei Industrial Zone, Xiang'an District, Xiamen,China

Product description

Trade Mark..... : N/A

Product name..... : Driver Monitoring System

Model and/or type reference . : AIS

Standards : FCC Rules and Regulations Part 22 & Part 24 & Part 27& Part 90
ANSI C63.26:2015

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Shenzhen Tongzhou Testing Co.,Ltd Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Shenzhen Tongzhou Testing Co.,Ltd Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Date of TestDate (s) of performance of tests : **2023/3/4 ~ 2023/3/28**Date of Issue : **2023/3/29**Test Result : **Pass**

Testing Engineer :

(Anna Hu)

Technical Manager :

(Hugo Chen)

Authorized Signatory :

(Andy Zhang)

**Revision History**

Revision	Issue Date	Revisions	Revised By
000	2023/3/29	Initial Issue	Andy Zhang



Contents

1	TEST STANDARDS	5
2	SUMMARY	6
2.1	Product Description	6
2.2	Host System Configuration List and Details.....	7
2.3	Short description of the Equipment under Test (EUT)	7
2.5	Normal Accessory setting.....	7
2.6	EUT configuration.....	7
2.7	Related Submittal(s) / Grant (s).....	7
2.8	Modifications	7
3	TEST ENVIRONMENT	8
3.1	Test Facility	8
3.2	Environmental conditions	8
3.3	Test Description.....	8
3.4	Equipments Used during the Test.....	11
3.5	Measurement uncertainty.....	12
4	TEST CONDITIONS AND RESULTS	13
4.1	E.I.R.P / E.R.P.....	13
4.2	Radiated Spurious Emssion	22
5	Test Set up Photos of the EUT	34
6	External Photos of the EUT	34
7	Internal Photos of the EUT	34



1 TEST STANDARDS

The tests were performed according to following standards:

[FCC Part 2:](#) FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

[FCC Part 22 Subpart H:](#) PRIVATE LAND MOBILE RADIO SERVICES.

[FCC Part 24 Subpart E:](#) PUBLIC MOBILE SERVICES

[FCC Part 27:](#) Miscellaneous Wireless Communications Services.

[FCC Part 90:](#) PRIVATE LAND MOBILE RADIO SERVICES

[ANSI/TIA-603-E-2016:](#) Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[ANSI C63.26-2015:](#) IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[FCC KDB 971168D01](#) Power Meas License Digital Systems



2 SUMMARY

2.1 Product Description

Product Name	: Driver Monitoring System
Model Number	: AIS
Model Difference Declaration	: N/A
Test Model	: AIS
Power Supply	: DC 24V
Hardware version	: v2.3.1
Software version	: v1.1.2
Sample ID	: TZ230204021-1#&TZ230204021-2#

GSM

GSM FCC Operation Frequency	: GSM850(UL: 824 – 849 MHz/DL: 869 – 894 MHz) GSM1900(UL: 1850 – 1910 MHz/DL: 1930 – 1990 MHz)
Channel Separation	: 0.2MHz
Modulation Technology	: GMSK,8PSK
Antenna Type And Gain	: GSM850:5.0 dBi GSM1900:4.9 dBi

E-UTRA

E-UTRA FCC Operation Frequency	: FDD Band 2 (UL: 1850 – 1910 MHz/DL: 1930 – 1990 MHz) FDD Band 4 (UL: 1710 – 1755 MHz/DL: 2110 – 2155 MHz) FDD Band 5 (UL: 824 – 849 MHz/DL: 869 – 894 MHz) FDD Band 12(UL: 699 – 716 MHz/DL: 729 – 746 MHz) FDD Band 26 (UL: 814 – 849 MHz/DL: 859 – 894 MHz)
Channel Separation	: 0.1 MHz
Modulation Technology	: OFDM (BPSK,16QAM, QPSK)
Antenna Type And Gain	: Internal Antenna FDD Band 2:4.9 dBi FDD Band 4:4.9 dBi FDD Band 5:5.0 dBi FDD Band 12:4.7 dBi FDD Band 26:4.7 dBi

Note 1: Antenna position refer to EUT Photos.

Note 2: the above information was supplied by the applicant..



2.2 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate

2.3 Short description of the Equipment under Test (EUT)

2.3.1 General Description

EUT is subscriber equipment in the LTE/WCDMA/GSM system. Support bands as list in section 2.1 of this report.

2.5 Normal Accessory setting

Fully charged battery was used during the test.

2.6 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- supplied by the manufacturer
- – supplied by the lab

○	/	Model:	/
		Input:	/
		Output:	/
		Lab. Code:	/

2.7 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2BADP-AIS** filing to comply with FCC Rules.

2.8 Modifications

No modifications were implemented to meet testing criteria.



3 TEST ENVIRONMENT

3.1 Test Facility

FCC

Designation Number: CN1275

Test Firm Registration Number: 167722

Shenzhen Tongzhou Testing Co.,Ltd has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements

A2LA

Certificate Number: 5463.01

Shenzhen Tongzhou Testing Co.,Ltd has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

IC

ISED#: 22033

CAB identifier: CN0099

Shenzhen Tongzhou Testing Co.,Ltd has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010

3.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.3 Test Description

FDD Band 2[Part 24]

Test Item	FCC Rule No.	Requirements	Judgement	Sample ID
Effective (Isotropic) Radiated Power	2.1046, 24.232(c)	EIRP ≤ 2W(33dBm)	Pass	TZ230204021-2#
Bandwidth	2.1049 24.238(a)	OBW: No limit. EBW: No limit.	Pass	Note1
Band Edges	2.1051, 24.238(a)	-13dBm	Pass	Note1
Spurious Emission at Antenna Terminals	2.1051, 24.238(a)	-13dBm	Pass	Note1
Field Strength of Spurious Radiation	2.1053, 24.238(a)	-13dBm	Pass	TZ230204021-2#
Frequency Stability	2.1055, 24.235	the fundamental emission stays within the authorized frequency block.	Pass	Note1
Peak to average ratio	24.232(d)	<13dB	Pass	Note1

**FDD Band 5[Part 22]**

Test Item	FCC Rule No.	Requirements	Judgement	Sample ID
Effective (Isotropic) Radiated Power	2.1046, 22.913(a)	ERP ≤ 7W(38.5dBm)	Pass	TZ230204021-2#
Occupied Bandwidth	2.1049	OBW: No limit.	Pass	Note1
Emission Bandwidth	22.917(b)	EBW: No limit.	Pass	Note1
Band Edges Compliance	2.1051, 22.917(a)(b)	-13dBm	Pass	Note1
Spurious Emission at Antenna Terminals	2.1051, 22.917	-13dBm	Pass	Note1
Field Strength of Spurious Radiation	2.1053, 22.917	-13dBm	Pass	TZ230204021-2#
Frequency Stability	2.1055, 22.355	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass	Note1
Peak to average ratio	2.1046, 22.913(a)	<13dB	Pass	Note1

FDD Band26[Part 22,90]

Test Item	FCC Rule No.	Requirements	Judgement	Sample ID
Effective (Isotropic) Radiated Power	2.1046, 22.913(a) 90.635	ERP ≤ 7W(38.5dBm) for 824 – 849MHz ERP ≤ 100W(50dBm) for 814 – 824 Mhz	Pass	TZ230204021-2#
Occupied Bandwidth	2.1049	OBW: No limit.	Pass	Note1
Emission Bandwidth	-- 22.917(b)	EBW: No limit.	Pass	Note1
Band Edges Compliance	2.1051 90.691 22.917(a)(b)	Detail in 90.691 and 22.917(a)(b)	Pass	Note1
Spurious Emission at Antenna Terminals	2.1051, 90.691 22.917	-13dBm	Pass	Note1
Field Strength of Spurious Radiation	2.1053, 90.691 22.917	-13dBm	Pass	TZ230204021-2#
Frequency Stability	2.1055, 90.213 22.355	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass	Note1
Peak to average ratio	2.1046, 22.913(a)	<13dB	Pass	Note1

FDD Band 4[Part 27]

Test Item	FCC Rule No.	Requirements	Judgement	Sample ID
Effective (Isotropic) Radiated Power	2.1046, 27.50(d)	ERP ≤ 1W(30dBm)	Pass	TZ230204021-2#
Occupied Bandwidth	2.1049	OBW: No limit.	Pass	Note1
Emission Bandwidth	2.1049	EBW: No limit.	Pass	Note1
Band Edges Compliance	2.1051, 27.53(h)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Pass	Note1
Spurious Emission at Antenna Terminals	2.1051, 27.53(h)	-13dBm	Pass	Note1
Field Strength of Spurious Radiation	2.1053, 27.53(h)	-13dBm	Pass	TZ230204021-2#
Frequency Stability	2.1055, 27.54	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass	Note1
Peak to average ratio	2.1046, 27.50(d)	<13dB	Pass	Note1

**FDD Band 12[Part 27]**

Test Item	FCC Rule No.	Requirements	Judgement	Sample ID
Effective (Isotropic) Radiated Power	2.1046, 27.50(c)	ERP $\leq$ 3W(34.8dBm)	Pass	TZ230204021-2#
Occupied Bandwidth	2.1049	OBW: No limit.	Pass	Note1
Emission Bandwidth	2.1049	EBW: No limit.	Pass	Note1
Band Edges Compliance	2.1051, 27.53(g)	$\leq$ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Pass	Note1
Spurious Emission at Antenna Terminals	2.1051, 27.53(g)	-13dBm	Pass	Note1
Field Strength of Spurious Radiation	2.1053, 27.53(g)	-13dBm	Pass	TZ230204021-2#
Frequency Stability	2.1055, 27.54	the fundamental emissions stay within the authorized bands of operation. (2.5ppm)	Pass	Note1
Peak to average ratio	2.1046, 27.50(d)	<13dB	Pass	Note1

Remark: The measurement uncertainty is not included in the test result.

Note1: the LTE module in this product has already finished the certification(FCC ID: XMR201910BG95M3), Reference the results in the original test report



3.4 Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	MXA Signal Analyzer	Keysight	N9020A	MY52091623	2022/12/28	2023/12/27
2	Power Sensor	Agilent	U2021XA	MY5365004	2022/12/28	2023/12/27
3	Loop Antenna	schwarzbeck	FMZB1519 B	00023	2022/11/13	2025/11/12
4	Wideband Antenna	schwarzbeck	VULB 9163	958	2022/11/13	2025/11/12
5	Horn Antenna	schwarzbeck	BBHA 9120D	01989	2022/11/13	2025/11/12
6	EMI Test Receiver	R&S	ESCI	100849/003	2022/12/28	2023/12/27
7	Controller	MF	MF7802	N/A	N/A	N/A
8	Amplifier	schwarzbeck	BBV 9743	209	2022/12/28	2023/12/27
9	Amplifier	Tonscend	TSAMP-0518SE	--	2022/12/28	2023/12/27
10	RF Cable(below 1GHz)	HUBER+SUHNER	RG214	N/A	2022/12/28	2023/12/27
11	RF Cable(above 1GHz)	HUBER+SUHNER	RG214	N/A	2022/12/28	2023/12/27
12	RE test software	Tonscend	JS32-RE	V2.0.2.0	N/A	N/A
12	Test Software	Tonscend	JS1120-3	V2.5.77.0418	N/A	N/A
14	Horn Antenna	A-INFO	LB-180400-KF	J211020657	2022/12/28	2023/12/27
15	Amplifier	CDSA	PAP-1840	17021	2022/12/28	2023/12/27
16	Spectrum Analyzer	R&S	FSP40	100550	2023/1/10	2024/1/9
17	UNIVERSAL RADIO COMMUNICATION	R&S	CMW500	101855	2022/12/28	2023/12/27
18	Signal Generator	Keysight	N5182A	MY4620709	2022/12/28	2023/12/27



3.5 Measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to ETSI TR 100 028 “ Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics” and is documented in the Shenzhen Tongzhou Testing Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Tongzhou Testing Co.,Ltd is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	3.10 dB	(1)
Radiated Emission	1~18GHz	3.70 dB	(1)
Radiated Emission	18-40GHz	3.90 dB	(1)
Conducted Disturbance	0.15~30MHz	1.63 dB	(1)
Conducted Power	9KHz~18GHz	0.61 dB	(1)
Spurious RF Conducted Emission	9KHz~40GHz	1.22 dB	(1)
Band Edge Compliance of RF Emission	9KHz~40GHz	1.22 dB	(1)
Occuiped Bandwidth	9KHz~40GHz	-	(1)
Frequency Error	9KHz~40GHz	1×10^{-7}	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.



4 TEST CONDITIONS AND RESULTS

4.1 E.I.R.P / E.R.P

TEST APPLICABLE

During the process of testing, the EUT was controlled via R&S Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. This result contains output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

LIMIT

For Radiated Power

This is the test for the maximum radiated power from the EUT.

Per Part 22.913(a)(4) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

Per Part 24.232(c) Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

Per Part 27.50(d) (4) specifies, Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755MHz band are limited to 1W EIRP. Fixed stations operating in this band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in this band must employ a means for limiting power to the minimum necessary for successful communications.

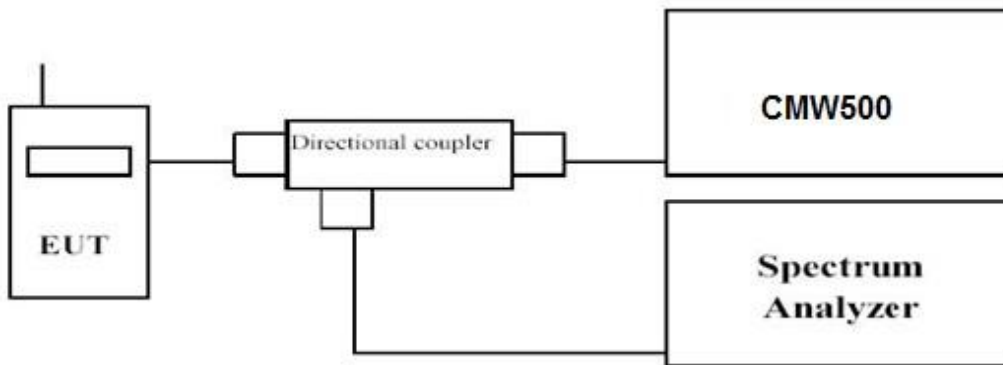
Per Part 27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

Per Part 27.50(b) (9) specifies, Control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands and fixed stations transmitting in the 787-788 MHz and 805-806 MHz bands are limited to 30 watts ERP.

Per Part 27.50(b)(10) specifies, Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

Per Part 27.50(a) (3) specifies, *Mobile and portable stations.* (i) 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.

Per Part 27.50(h) (2) specifies, The following power limits shall apply in the BRS and EBS: *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.

TEST CONFIGURATION**TEST PROCEDURE**

1. Place the EUT on a bench and set it in transmitting mode.
2. Connect a low loss RF cable from the antenna port to a CMW500 by an Att.
3. EUT Communicate with CMW500 then selects a channel for testing.
4. Add a correction factor to the display CMW500, and then test.
5. Record the Peak power(P1) and Average power(P2).
6. Peak-to-Average Ratio (PAR) = Peak power(P1) - Average power(P2)
7. EIRP = Average power(P2) + Antenna Gain(dBi), ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST RESULTS

Pass

Note: only record the worst case result in this item.



For eMTC:

LTE Band 2	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		Antenna Gain (dBi)	EIRP Power(dBm)	
				QPSK	16QAM		QPSK	16QAM
1.4MHz	18607/1850.7	0	1#0	20.92	19.64	4.9	25.82	24.54
		0	6#0	18.71	19.02	4.9	23.61	23.92
	18900/1880	0	1#0	19.87	19.61	4.9	24.77	24.51
		0	6#0	18.38	18.19	4.9	23.28	23.09
	19193/1909.3	0	1#5	20.17	19.08	4.9	25.07	23.98
		0	6#0	18.35	18.68	4.9	23.25	23.58
3MHz	18615/1851.5	0	1#0	20.38	19.68	4.9	25.28	24.58
		0	6#0	18.78	18.91	4.9	23.68	23.81
	18900/1880	0	1#0	20.21	19.27	4.9	25.11	24.17
		0	6#0	18.45	18.73	4.9	23.35	23.63
	19185/1908.5	1	1#5	20.02	19.11	4.9	24.92	24.01
		1	6#0	18.41	18.74	4.9	23.31	23.64
5MHz	18625/1852.5	0	1#0	20.08	20.29	4.9	24.98	25.19
		0	6#0	19.47	19.66	4.9	24.37	24.56
	18900/1880	0	1#0	20.05	19.71	4.9	24.95	24.61
		0	6#0	19.24	19.38	4.9	24.14	24.28
	19175/1907.5	0	1#5	19.68	20.02	4.9	24.58	24.92
		3	6#0	19.28	19.40	4.9	24.18	24.3
10MHz	18650/1855	3	1#0	19.92	20.19	4.9	24.82	25.09
		0	4#0	20.07	19.83	4.9	24.97	24.73
	18900/1880	0	1#0	19.96	19.53	4.9	24.86	24.43
		0	4#0	19.78	20.11	4.9	24.68	25.01
	19150/1905	4	1#5	19.88	19.51	4.9	24.78	24.41
		7	4#2	20.01	20.14	4.9	24.91	25.04
15MHz	18675/1857.5	3	1#0	20.22	20.11	4.9	25.12	25.01
		0	6#0	20.13	20.26	4.9	25.03	25.16
	18900/1880	0	1#0	20.14	19.81	4.9	25.04	24.71
		0	6#0	20.05	19.95	4.9	24.95	24.85
	19125/1902.5	8	1#5	19.95	19.51	4.9	24.85	24.41
		11	6#0	19.88	19.87	4.9	24.78	24.77
20MHz	18700/1860	3	1#0	20.17	19.96	4.9	25.07	24.86
		0	6#0	20.08	20.01	4.9	24.98	24.91
	18900/1880	0	1#0	19.90	19.59	4.9	24.80	24.49
		0	6#0	19.86	19.97	4.9	24.76	24.87
	19100/1900	12	1#5	19.76	19.34	4.9	24.66	24.24
		15	6#0	19.83	20.04	4.9	24.73	24.94



LTE Band 4	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		Antenna Gain (dBi)	EIRP Power(dBm)	
				QPSK	16QAM		QPSK	16QAM
1.4MHz	19957/1710.7	0	1#0	20.83	19.76	4.9	25.73	24.66
		0	6#0	18.78	19.04	4.9	23.68	23.94
	20175/1732.5	0	1#0	20.57	19.62	4.9	25.47	24.52
		0	6#0	18.52	18.54	4.9	23.42	23.44
	20393/1754.3	0	1#5	19.92	19.75	4.9	24.82	24.65
		0	6#0	18.63	18.48	4.9	23.53	23.38
3MHz	19965/1711.5	0	1#0	20.41	20.02	4.9	25.31	24.92
		0	6#0	18.71	18.78	4.9	23.61	23.68
	20175/1732.5	0	1#0	20.32	19.37	4.9	25.22	24.27
		0	6#0	18.71	18.94	4.9	23.61	23.84
	20385/1753.5	1	1#5	20.15	19.15	4.9	25.05	24.05
		1	6#0	18.81	19.01	4.9	23.71	23.91
5MHz	19975/1712.5	0	1#0	20.39	20.51	4.9	25.29	25.41
		0	6#0	19.81	19.91	4.9	24.71	24.81
	20175/1732.5	0	1#0	20.28	20.39	4.9	25.18	25.29
		0	6#0	19.73	19.67	4.9	24.63	24.57
	20375/1752.5	3	1#5	20.11	20.17	4.9	25.01	25.07
		3	6#0	19.72	19.69	4.9	24.62	24.59
10MHz	20000/1715	0	1#0	20.38	20.49	4.9	25.28	25.39
		0	4#0	20.27	20.14	4.9	25.17	25.04
	20175/1732.5	0	1#0	20.16	20.24	4.9	25.06	25.14
		0	4#0	20.12	19.98	4.9	25.02	24.88
	20350/1750	7	1#5	19.94	20.07	4.9	24.84	24.97
		7	4#2	20.04	19.91	4.9	24.94	24.81
15MHz	20025/1717.5	0	1#0	20.33	20.48	4.9	25.23	25.38
		0	6#0	20.27	20.42	4.9	25.17	25.32
	20175/1732.5	0	1#0	20.16	20.31	4.9	25.06	25.21
		0	6#0	20.12	20.24	4.9	25.02	25.14
	20325/1747.5	11	1#5	19.97	20.11	4.9	24.87	25.01
		11	6#0	20.04	20.11	4.9	24.94	25.01
20MHz	20050/1720	0	1#0	20.32	20.46	4.9	25.22	25.36
		0	6#0	20.19	20.36	4.9	25.09	25.26
	20175/1732.5	0	1#0	20.24	20.38	4.9	25.14	25.28
		0	6#0	20.09	20.21	4.9	24.99	25.11
	20300/1745	15	1#5	20.11	20.14	4.9	25.01	25.04
		15	6#0	20.11	20.16	4.9	25.01	25.06



LTE Band5	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		Antenna Gain (dBi)	ERP Power(dBm)	
				QPSK	16QAM		QPSK	16QAM
1.4MHz	20407/824.7	0	1#0	20.87	19.51	5	23.72	22.36
		0	6#0	18.82	19.48	5	21.67	22.33
	20525/836.5	0	1#0	20.24	20.45	5	23.09	23.3
		0	6#0	18.83	18.39	5	21.68	21.24
	20643/848.3	0	1#5	20.44	19.36	5	23.29	22.21
		0	6#0	18.61	19.31	5	21.46	22.16
3MHz	20415/825.5	0	1#0	20.50	20.38	5	23.35	23.23
		0	6#0	18.79	19.02	5	21.64	21.87
	20525/836.5	0	1#0	20.53	20.07	5	23.38	22.92
		0	6#0	18.91	18.99	5	21.76	21.84
	20635/847.5	1	1#5	20.44	19.42	5	23.29	22.27
		1	6#0	18.67	19.09	5	21.52	21.94
5MHz	20425/826.5	0	1#0	20.37	20.68	5	23.22	23.53
		0	6#0	19.94	19.73	5	22.79	22.58
	20525/836.5	0	1#0	20.41	20.58	5	23.26	23.43
		0	6#0	19.97	19.89	5	22.82	22.74
	20625/846.5	3	1#5	20.03	20.41	5	22.88	23.26
		3	6#0	19.86	19.91	5	22.71	22.76
10MHz	20450/829	0	1#0	20.37	20.78	5	23.22	23.63
		0	4#0	20.56	20.28	5	23.41	23.13
	20525/836.5	0	1#0	20.41	20.74	5	23.26	23.59
		0	4#0	20.53	20.32	5	23.38	23.17
	20600/844	7	1#5	20.02	20.34	5	22.87	23.19
		7	4#2	20.30	20.08	5	23.15	22.93

LTE Band 12	Channel/ Frequency(MHz)	Index	RB# RBstart	Conducted Power (dBm)		Antenna Gain (dBi)	ERP Power(dBm)	
				QPSK	16QAM		QPSK	16QAM
1.4MHz	23017/699.7	0	1#0	20.02	19.76	4.7	22.57	22.31
		0	6#0	18.64	18.62	4.7	21.19	21.17
	23095/707.5	0	1#0	19.85	19.73	4.7	22.40	22.28
		0	6#0	18.51	18.42	4.7	21.06	20.97
	23173/715.3	0	1#5	20.46	19.32	4.7	23.01	21.87
		0	6#0	18.56	19.03	4.7	21.11	21.58
3MHz	23025/700.5	0	1#0	20.25	19.76	4.7	22.80	22.31
		0	6#0	18.69	18.61	4.7	21.24	21.16
	23095/707.5	0	1#0	20.22	20.01	4.7	22.77	22.56
		0	6#0	18.47	18.58	4.7	21.02	21.13
	23165/714.5	1	1#5	20.21	19.81	4.7	22.76	22.36
		1	6#0	18.55	18.63	4.7	21.1	21.18
5MHz	23035/701.5	3	1#0	20.19	20.39	4.7	22.74	22.94
		0	6#0	19.67	19.82	4.7	22.22	22.37
	23095/707.5	0	1#0	20.01	20.21	4.7	22.56	22.76
		0	6#0	19.60	19.73	4.7	22.15	22.28
	23155/713.5	0	1#5	19.96	20.19	4.7	22.51	22.74



		3	6#0	19.61	19.77	4.7	22.16	22.32
10MHz	23060/704	3	1#0	20.21	20.41	4.7	22.76	22.96
		0	4#0	20.23	20.07	4.7	22.78	22.62
	23095/707.5	0	1#0	20.16	20.30	4.7	22.71	22.85
		0	4#0	20.07	19.95	4.7	22.62	22.5
	23130/711	4	1#5	19.91	20.13	4.7	22.46	22.68
		7	4#2	20.15	19.90	4.7	22.7	22.45

Band26	Channel/ Frequency(MHz)	Index	RB# RB start	Conducted Power (dBm)		Antenna Gain (dBi)	ERP Power(dBm)	
				QPSK	16QAM		QPSK	16QAM
1.4MHz	26797/824.7	0	1#0	19.93	20.01	4.7	22.48	22.56
		0	6#0	18.68	18.41	4.7	21.23	20.96
	26915/836.5	0	1#0	20.49	19.10	4.7	23.04	21.65
		0	6#0	18.42	19.03	4.7	20.97	21.58
	27033/848.3	0	1#5	20.31	19.34	4.7	22.86	21.89
		0	6#0	18.51	19.27	4.7	21.06	21.82
3MHz	26805/825.5	0	1#0	20.33	19.36	4.7	22.88	21.91
		0	6#0	18.48	19.01	4.7	21.03	21.56
	26915/836.5	0	1#0	20.16	19.29	4.7	22.71	21.84
		0	6#0	18.40	18.81	4.7	20.95	21.36
	27025/847.5	1	1#5	19.98	19.87	4.7	22.53	22.42
		1	6#0	18.60	18.95	4.7	21.15	21.5
5MHz	26815/826.5	3	1#0	20.20	20.41	4.7	22.75	22.96
		0	6#0	19.78	19.91	4.7	22.33	22.46
	26915/836.5	0	1#0	19.97	20.19	4.7	22.52	22.74
		0	6#0	19.54	19.76	4.7	22.09	22.31
	27015/846.5	0	1#5	20.19	19.51	4.7	22.74	22.06
		3	6#0	19.69	19.70	4.7	22.24	22.25
10MHz	26840/829	3	1#0	20.35	19.58	4.7	22.90	22.13
		0	4#0	20.27	20.51	4.7	22.82	23.06
	26915/836.5	0	1#0	20.27	19.51	4.7	22.82	22.06
		0	4#0	19.54	20.45	4.7	22.09	23
	26990/844	4	1#5	20.23	19.46	4.7	22.78	22.01
		7	4#2	20.15	20.33	4.7	22.7	22.88
15MHz	26865/831.5	3	1#0	20.16	20.33	4.7	22.71	22.88
		0	6#0	20.18	20.37	4.7	22.73	22.92
	26915/836.5	0	1#0	20.32	19.64	4.7	22.87	22.19
		0	6#0	20.16	20.28	4.7	22.71	22.83
	26965/841.5	8	1#5	20.16	19.71	4.7	22.71	22.26
		11	6#0	20.06	20.18	4.7	22.61	22.73



Band26	Channel/ Frequency(MHz)	Index	RB# RB start	Conducted Power (dBm)		Antenna Gain (dBi)	ERP Power(dBm)	
				QPSK	16QAM		QPSK	16QAM
1.4MHz	26697/814.7	0	1#0	20.05	20.10	4.7	22.60	22.65
		0	6#0	18.81	18.61	4.7	21.36	21.16
	26740/819	0	1#0	20.03	20.05	4.7	22.58	22.6
		0	6#0	18.78	18.53	4.7	21.33	21.08
	26783/823.3	0	1#5	19.83	19.94	4.7	22.38	22.49
		0	6#0	18.57	18.34	4.7	21.12	20.89
3MHz	26705/815.5	0	1#0	20.31	20.23	4.7	22.86	22.78
		0	6#0	18.73	18.75	4.7	21.28	21.3
	26740/819	0	1#0	20.28	20.22	4.7	22.83	22.77
		0	6#0	18.73	18.85	4.7	21.28	21.4
	26775/822.5	1	1#5	19.92	19.80	4.7	22.47	22.35
		1	6#0	18.57	18.35	4.7	21.12	20.9
5MHz	26715/816.5	3	1#0	20.46	19.80	4.7	23.01	22.35
		0	6#0	19.86	19.99	4.7	22.41	22.54
	26740/819	0	1#0	20.28	19.64	4.7	22.83	22.19
		0	6#0	19.86	19.83	4.7	22.41	22.38
	26765/821.5	0	1#5	20.06	20.31	4.7	22.61	22.86
		3	6#0	19.77	20.00	5.7	23.32	23.55
10MHz	26740/819	0	1#0	20.52	19.86	6.7	25.07	24.41
		0	4#0	19.89	20.55	7.7	25.44	26.1



For NB-IOT:

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/middle/high channel			Antenna Gain (dBi)	EIRP Power(dBm)		
				18602/1850.2	18900/1880.0	19198/1909.8		18602/1850.2	18900/1880.0	19198/1909.8
NB-IOT Band 2 Standalone	BPSK	3.75	1@0	20.15	20.01	20.35	4.9	25.05	24.91	25.25
			1@47	20.07	19.96	20.29	4.9	24.97	24.86	25.19
		15	1@0	20.27	20.05	20.37	4.9	25.17	24.95	25.27
			1@11	20.23	20.01	20.35	4.9	25.13	24.91	25.25
	QPSK	3.75	1@0	20.11	19.97	20.33	4.9	25.01	24.87	25.23
			1@47	20.08	19.94	20.25	4.9	24.98	24.84	25.15
		15	1@0	20.30	20.06	20.37	4.9	25.20	24.96	25.27
			1@11	20.32	20.10	20.31	4.9	25.22	25.00	25.21
		15	12@0	19.32	18.01	18.32	4.9	24.22	22.91	23.22

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Maximum Output Power(dBm)			Antenna Gain (dBi)	EIRP Power(dBm)		
				19952 / 1710.2	20175 / 1732.5	20398 / 1754.8		19952 / 1710.2	20175 / 1732.5	20398 / 1754.8
Band 4 Standalone	BPSK	3.75	1@0	20.18	20.19	20.19	4.9	25.08	25.09	25.09
			1@47	20.16	20.08	20.12	4.9	25.06	24.98	25.02
		15	1@0	20.18	20.12	20.15	4.9	25.08	25.02	25.05
			1@11	20.13	20.11	20.11	4.9	25.03	25.01	25.01
	QPSK	3.75	1@0	20.14	20.14	20.14	4.9	25.04	25.04	25.04
			1@47	20.13	20.17	20.12	4.9	25.03	25.07	25.02
		15	1@0	20.12	20.16	20.13	4.9	25.02	25.06	25.03
			1@11	20.15	20.15	20.19	4.9	25.05	25.05	25.09
		15	12@0	18.97	18.69	18.97	4.9	23.87	23.59	23.87



Mode	Modulation	Sub-carrier spacing (KHz)	N tones	Maximum Output Power(dBm)			Antenna Gain (dBi)	EIRP Power(dBm)		
				20402 / 824.2	20525 / 836.5	20648 / 848.8		20402 / 824.2	20525 / 836.5	20648 / 848.8
Band 5 Standalone	BPSK	3.75	1@0	20.71	20.67	20.62	5	25.71	25.67	25.62
			1@47	20.64	20.64	20.57	5	25.64	25.64	25.57
		15	1@0	20.68	20.52	20.74	5	25.68	25.52	25.74
			1@11	20.67	20.41	20.73	5	25.67	25.41	25.73
	QPSK	3.75	1@0	20.71	20.70	20.63	5	25.71	25.70	25.63
			1@47	20.72	20.48	20.59	5	25.72	25.48	25.59
		15	1@0	20.65	20.47	20.68	5	25.65	25.47	25.68
			1@11	20.64	20.55	20.73	5	25.64	25.55	25.73
		15	12@0	19.51	19.54	19.35	5	24.51	24.54	24.35

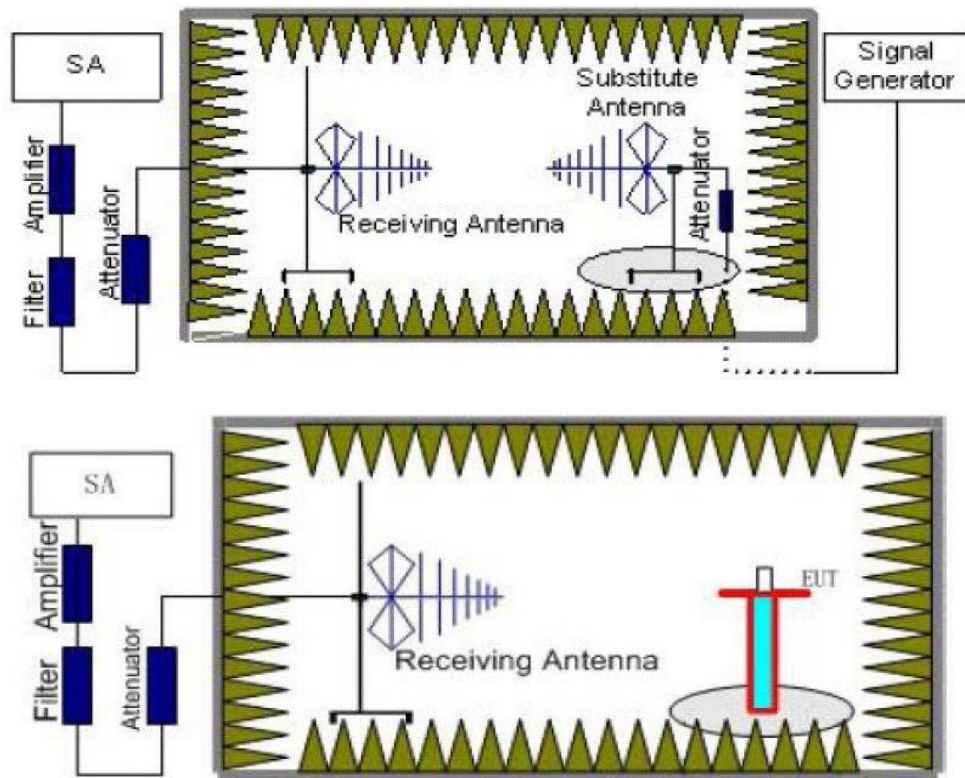
Mode	Modulation	Sub-carrier spacing (KHz)	N tones	Maximum Output Power(dBm)			Antenna Gain (dBi)	EIRP Power(dBm)		
				23012 / 699.2	23095 / 707.5	23178 / 715.8		23012 / 699.2	23095 / 707.5	23178 / 715.8
Band 12 Standalone	BPSK	3.75	1@0	20.65	20.61	20.66	4.7	25.35	25.31	25.36
			1@47	20.47	20.51	20.56	4.7	25.17	25.21	25.26
		15	1@0	20.34	20.66	20.66	4.7	25.04	25.36	25.36
			1@11	20.26	20.64	20.54	4.7	24.96	25.34	25.24
	QPSK	3.75	1@0	20.47	20.52	20.53	4.7	25.17	25.22	25.23
			1@47	20.49	20.38	20.64	4.7	25.19	25.08	25.34
		15	1@0	20.30	20.61	20.65	4.7	25.00	25.31	25.35
			1@11	20.29	20.63	20.66	4.7	24.99	25.33	25.36
		15	12@0	19.03	18.95	19.35	4.7	23.73	23.65	24.05

4.2 Radiated Spurious Emission

LIMIT

Refer to section 3.3 of this report for each frequency band

TEST CONFIGURATION



TEST PROCEDURE

1. Setup as illustrated above the DUT placed on the 0.8m height (for frequencies < 1GHz) or 1.5m (for frequencies > 1GHz) of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna. 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 (P_{Mea}) 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 (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}), the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
The measurement results are obtained as described below:
$$\text{Power(EIRP)} = P_{Mea} + P_{Ag} - P_{cl} + G_a$$

It can omit power amplifier if signal generator level meets requirement;



6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15 \text{ dBi}$.
8. In order to make sure test results more clearly, we set frequency range and sweep time for different frequency range as follows table:

Subrange (GHz)	RBW	VBW	Sweep time (s)
0.00009~0.15	1KHz	3KHz	30
0.00015~0.03	10KHz	30KHz	10
0.03~1	100KHz	300KHz	10
1~2	1 MHz	3 MHz	2
2~5	1 MHz	3 MHz	3
5~8	1 MHz	3 MHz	3
8~10 th	1 MHz	3 MHz	3

TEST LIMITS

According to rules specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Channel	Frequency Range	Verdict
Low	9 KHz – 10 th GHz	PASS
Middle	9 KHz – 10 th GHz	PASS
High	9 KHz – 10 th GHz	PASS

TEST RESULTS

Pass

Temperature	24.8°C	Humidity	58%
Test Engineer	Anna Hu		

Remark:

1. We tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth as list in section 3.3 of this report;
2. $EIRP = P_{Meas}(\text{dBm}) - P_{cl}(\text{dB}) + G_a(\text{dBi})$
3. We were not recorded other points as values lower than limits.
4. $\text{Margin} = EIRP - \text{Limit}$



For eMTC

Report No.: TZ230204021-E2

LTE FDD Band 2_Channel Bandwidth 1.4MHz_QPSK_Low Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3701.4	-53.38	1.26	3	12.1	-42.54	-13	29.54	H
3701.4	-57.40	1.26	3	12.1	-46.56	-13	33.56	V
5552.1	-48.98	1.7	3	12.58	-38.10	-13	25.10	H
5552.1	-53.44	1.7	3	12.58	-42.56	-13	29.56	V

LTE FDD Band 2_Channel Bandwidth 1.4MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760	-56.71	1.28	3	12.16	-45.83	-13	32.83	H
3760	-56.72	1.28	3	12.16	-45.84	-13	32.84	V
5640	-49.57	1.72	3	12.62	-38.67	-13	25.67	H
5640	-59.28	1.72	3	12.62	-48.38	-13	35.38	V

LTE FDD Band 2_Channel Bandwidth 1.4MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3818.6	-55.45	1.29	3	12.22	-44.52	-13	31.52	H
3818.6	-57.06	1.29	3	12.22	-46.13	-13	33.13	V
5727.9	-53.65	1.74	3	12.66	-42.73	-13	29.73	H
5727.9	-55.75	1.74	3	12.66	-44.83	-13	31.83	V

*LTE FDD Band 4_Channel Bandwidth 1.4MHz_QPSK_Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3421.4	-54.02	1.2	3	11.82	-43.40	-13	30.40	H
3421.4	-54.05	1.2	3	11.82	-43.43	-13	30.43	V
5132.1	-49.57	1.6	3	12.37	-38.80	-13	25.80	H
5132.1	-58.94	1.6	3	12.37	-48.17	-13	35.17	V

LTE FDD Band 4_Channel Bandwidth 1.4MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465	-53.18	1.21	3	11.86	-42.53	-13	29.53	H
3465	-55.14	1.21	3	11.86	-44.49	-13	31.49	V
5197.5	-49.65	1.61	3	12.4	-38.86	-13	25.86	H
5197.5	-58.82	1.61	3	12.4	-48.03	-13	35.03	V

LTE FDD Band 4_Channel Bandwidth 1.4MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3508.6	-58.56	1.22	3	11.91	-47.87	-13	34.87	H
3508.6	-55.03	1.22	3	11.91	-44.34	-13	31.34	V
5262.9	-49.39	1.63	3	12.43	-38.59	-13	25.59	H
5262.9	-60.13	1.63	3	12.43	-49.33	-13	36.33	V

*LTE FDD Band 5_Channel Bandwidth 1.4MHz_QPSK_Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1649.4	-49.83	0.83	3	8.59	-42.07	-13	29.07	H
1649.4	-53.14	0.83	3	8.59	-45.38	-13	32.38	V
2474.1	-46.94	0.99	3	10.72	-37.21	-13	24.21	H
2474.1	-56.91	0.99	3	10.72	-47.18	-13	34.18	V

LTE FDD Band 5_Channel Bandwidth 1.4MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673	-50.82	0.83	3	8.69	-42.96	-13	29.96	H
1673	-52.46	0.83	3	8.69	-44.60	-13	31.60	V
2509.5	-51.40	1	3	10.76	-41.64	-13	28.64	H
2509.5	-58.72	1	3	10.76	-48.96	-13	35.96	V

LTE FDD Band 5_Channel Bandwidth 1.4MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1696.6	-54.95	0.84	3	8.8	-46.99	-13	33.99	H
1696.6	-53.07	0.84	3	8.8	-45.11	-13	32.11	V
2544.9	-50.85	1.01	3	10.81	-41.05	-13	28.05	H
2544.9	-54.49	1.01	3	10.81	-44.69	-13	31.69	V

*LTE FDD Band 12_Channel Bandwidth 1.4MHz_QPSK_Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1399.4	-49.27	0.78	3	7.52	-42.53	-13	29.53	H
1399.4	-48.97	0.78	3	7.52	-42.23	-13	29.23	V
2099.1	-50.43	0.92	3	10.23	-41.12	-13	28.12	H
2099.1	-51.74	0.92	3	10.23	-42.43	-13	29.43	V

LTE FDD Band 12_Channel Bandwidth 1.4MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1415	-52.41	0.78	3	7.58	-45.61	-13	32.61	H
1415	-50.54	0.78	3	7.58	-43.74	-13	30.74	V
2122.5	-49.59	0.92	3	10.26	-40.25	-13	27.25	H
2122.5	-59.12	0.92	3	10.26	-49.78	-13	36.78	V

LTE FDD Band 12_Channel Bandwidth 1.4MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1430.6	-55.32	0.79	3	7.65	-48.46	-13	35.46	H
1430.6	-50.18	0.79	3	7.65	-43.32	-13	30.32	V
2145.9	-52.30	0.93	3	10.29	-42.94	-13	29.94	H
2145.9	-58.13	0.93	3	10.29	-48.77	-13	35.77	V

*LTE FDD Band 26A_Channel Bandwidth 1.4MHz_QPSK_Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1629.4	-51.48	0.83	3	8.51	-43.80	-13	30.80	H
1629.4	-53.42	0.83	3	8.51	-45.74	-13	32.74	V
2444.1	-50.86	0.99	3	10.68	-41.17	-13	28.17	H
2444.1	-55.07	0.99	3	10.68	-45.38	-13	32.38	V

LTE FDD Band 26A_Channel Bandwidth 1.4MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1638	-50.89	0.83	3	8.54	-43.18	-13	30.18	H
1638	-54.81	0.83	3	8.54	-47.10	-13	34.10	V
2457	-47.95	0.99	3	10.69	-38.25	-13	25.25	H
2457	-58.54	0.99	3	10.69	-48.84	-13	35.84	V

LTE FDD Band 26A_Channel Bandwidth 1.4MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1646.6	-51.08	0.83	3	8.58	-43.33	-13	30.33	H
1646.6	-55.44	0.83	3	8.58	-47.69	-13	34.69	V
2469.9	-47.80	0.99	3	10.71	-38.08	-13	25.08	H
2469.9	-52.66	0.99	3	10.71	-42.94	-13	29.94	V

*LTE FDD Band 26B_Channel Bandwidth 1.4MHz_QPSK_ Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1649.4	-51.64	0.83	3	8.59	-43.88	-13	30.88	H
1649.4	-54.68	0.83	3	8.59	-46.92	-13	33.92	V
2474.1	-49.65	0.99	3	10.72	-39.92	-13	26.92	H
2474.1	-55.45	0.99	3	10.72	-45.72	-13	32.72	V

LTE FDD Band 26B_Channel Bandwidth 1.4MHz_QPSK_ Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673	-51.66	0.83	3	8.69	-43.80	-13	30.80	H
1673	-51.59	0.83	3	8.69	-43.73	-13	30.73	V
2509.5	-48.79	1	3	10.76	-39.03	-13	26.03	H
2509.5	-54.43	1	3	10.76	-44.67	-13	31.67	V

LTE FDD Band 26B_Channel Bandwidth 1.4MHz_QPSK_ High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1696.6	-51.08	0.84	3	8.8	-43.12	-13	30.12	H
1696.6	-54.84	0.84	3	8.8	-46.88	-13	33.88	V
2544.9	-52.70	1.01	3	10.81	-42.90	-13	29.90	H
2544.9	-57.71	1.01	3	10.81	-47.91	-13	34.91	V



For NB-IOT

LTE FDD Band 2_Channel Bandwidth 0.2MHz_QPSK_Low Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3700.2	-53.12	1.26	3	12.1	-42.28	-13	29.28	H
3700.2	-53.21	1.26	3	12.1	-42.37	-13	29.37	V
5550.3	-47.07	1.7	3	12.58	-36.19	-13	23.19	H
5550.3	-56.24	1.7	3	12.58	-45.36	-13	32.36	V

LTE FDD Band 2_Channel Bandwidth 0.2MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760	-53.93	1.28	3	12.16	-43.05	-13	30.05	H
3760	-56.62	1.28	3	12.16	-45.74	-13	32.74	V
5640	-50.89	1.72	3	12.62	-39.99	-13	26.99	H
5640	-60.80	1.72	3	12.62	-49.90	-13	36.90	V

LTE FDD Band 2_Channel Bandwidth 0.2MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3819.8	-54.23	1.29	3	12.22	-43.30	-13	30.30	H
3819.8	-57.59	1.29	3	12.22	-46.66	-13	33.66	V
5729.7	-50.11	1.74	3	12.66	-39.19	-13	26.19	H
5729.7	-58.47	1.74	3	12.66	-47.55	-13	34.55	V

*LTE FDD Band 4_Channel Bandwidth 0.2MHz_QPSK_Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3420.2	-54.51	1.2	3	11.82	-43.89	-13	30.89	H
3420.2	-54.86	1.2	3	11.82	-44.24	-13	31.24	V
5130.3	-47.60	1.6	3	12.37	-36.83	-13	23.83	H
5130.3	-60.18	1.6	3	12.37	-49.41	-13	36.41	V

LTE FDD Band 4_Channel Bandwidth 0.2MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465	-53.21	1.21	3	11.86	-42.56	-13	29.56	H
3465	-56.96	1.21	3	11.86	-46.31	-13	33.31	V
5197.5	-49.37	1.61	3	12.4	-38.58	-13	25.58	H
5197.5	-56.97	1.61	3	12.4	-46.18	-13	33.18	V

LTE FDD Band 4_Channel Bandwidth 0.2MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3509.8	-54.18	1.22	3	11.91	-43.49	-13	30.49	H
3509.8	-55.70	1.22	3	11.91	-45.01	-13	32.01	V
5264.7	-49.19	1.63	3	12.43	-38.39	-13	25.39	H
5264.7	-53.42	1.63	3	12.43	-42.62	-13	29.62	V

*LTE FDD Band 5_Channel Bandwidth 0.2MHz_QPSK_Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1648.2	-50.12	0.83	3	8.59	-42.36	-13	29.36	H
1648.2	-51.47	0.83	3	8.59	-43.71	-13	30.71	V
2472.3	-46.71	0.99	3	10.71	-36.99	-13	23.99	H
2472.3	-51.98	0.99	3	10.71	-42.26	-13	29.26	V

LTE FDD Band 5_Channel Bandwidth 0.2MHz_QPSK_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673	-51.90	0.83	3	8.69	-44.04	-13	31.04	H
1673	-51.03	0.83	3	8.69	-43.17	-13	30.17	V
2509.5	-46.56	1	3	10.76	-36.80	-13	23.80	H
2509.5	-52.19	1	3	10.76	-42.43	-13	29.43	V

LTE FDD Band 5_Channel Bandwidth 0.2MHz_QPSK_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1697.8	-52.19	0.84	3	8.8	-44.23	-13	31.23	H
1697.8	-51.72	0.84	3	8.8	-43.76	-13	30.76	V
2546.7	-48.88	1.01	3	10.81	-39.08	-13	26.08	H
2546.7	-54.29	1.01	3	10.81	-44.49	-13	31.49	V

*LTE FDD Band 12_Channel Bandwidth 0.2MHz_QPSK_ Low Channel*

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1398.2	-49.45	0.78	3	7.51	-42.72	-13	29.72	H
1398.2	-51.78	0.78	3	7.51	-45.05	-13	32.05	V
2097.3	-46.95	0.92	3	10.23	-37.64	-13	24.64	H
2097.3	-57.00	0.92	3	10.23	-47.69	-13	34.69	V

LTE FDD Band 12_Channel Bandwidth 0.2MHz_QPSK_ Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1415	-52.54	0.78	3	7.58	-45.74	-13	32.74	H
1415	-53.72	0.78	3	7.58	-46.92	-13	33.92	V
2122.5	-47.66	0.92	3	10.26	-38.32	-13	25.32	H
2122.5	-54.91	0.92	3	10.26	-45.57	-13	32.57	V

LTE FDD Band 12_Channel Bandwidth 0.2MHz_QPSK_ High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1431.8	-53.45	0.79	3	7.66	-46.58	-13	33.58	H
1431.8	-53.43	0.79	3	7.66	-46.56	-13	33.56	V
2147.7	-50.30	0.93	3	10.29	-40.94	-13	27.94	H
2147.7	-58.51	0.93	3	10.29	-49.15	-13	36.15	V



5 Test Set up Photos of the EUT

Please refer to separated files for Test Setup Photos of the EUT.

6 External Photos of the EUT

Please refer to separated files for External Photos of the EUT.

7 Internal Photos of the EUT

Please refer to separated files for Internal Photos of the EUT.

*****End of Report*****