TEST REPORT

No. I20Z60442-WMD03

for

TCL Communication Ltd.

LINKHUB

Model Name: HH42NK

FCC ID: 2ACCJB120

with

Hardware Version: PIO

Software Version: HH42NK_V1.1.0B06

Issued Date: 2020-05-06

Note:

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The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I20Z60442-WMD03	Rev.0	1st edition	2020-05-06

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0 and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL (huayuan North Road)

Address:	No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

Location 2: CTTL (Shouxiang)

Address:	No. 51 Shouxiang Science Building, Xueyuan Road, Haidian District, Beijing, P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2020-03-30

Testing End Date: 2020-05-06

1.5. Signature

Dong Yuan

(Prepared this test report)

Zhou Yu

(Reviewed this test report)

Zhao Hui Lin

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCL Communication Ltd.
Address /Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact:	Gong Zhizhou
Email:	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	0086-755-36612000-81722

2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address /Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact:	Gong Zhizhou
Email:	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	0086-755-36612000-81722

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

3.1. About EUT

Description	LINKHUB
Model Name	HH42NK
FCC ID	2ACCJB120
Antenna	Embedded
Output power	28.84dBm maximum EIRP measured for LTE Band 66
Extreme vol. Limits	10.2VDC to 13.8VDC (nominal: 12VDC)
Extreme temp. Tolerance	0°C to +45°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version	Date of receipt
UT02a	355317110003182	PIO	HH42NK_V1.1.0B06	2020-03-30
UT14a	355317110002739	PIO	HH42NK_V1.1.0B06	2020-03-30
UT18a	355317110201604	PIO	HH42NK_V1.1.0B06	2020-03-30

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

3.3. Internal Identification of AE used during the test

AE ID*	Description
AE1	Charger

AE1

Model	S012CDU1200100
Manufacturer	Tenpao – US

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

4. Reference Documents

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

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-19 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-19 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-19 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01

5. LABORATORY ENVIRONMENT

Fully-anechoic chamber FAC-3 (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

6. SUMMARY OF TEST RESULT

LTE Band 2

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	24.232	P
2	Emission Limit	24.238	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	24.238	P
6	Band Edge Compliance	24.238	P
7	Conducted Spurious Emission	24.238	P
8	Peak-to-Average Power Ratio	24.232	P

LTE Band 5

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	22.913	P
2	Emission Limit	22.917	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	22.917	P
6	Band Edge Compliance	22.917	P
7	Conducted Spurious Emission	22.917	P

LTE Band 7

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

LTE Band 12

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

LTE Band 13

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

LTE Band 66

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

Terms used in Verdict column

P	Pass. The EUT complies with the essential requirements in the standard.
NP	Not Performed. The test was not performed by CTTL.
NA	Not Applicable.The test was not applicable.
BR	Re-use test data from basic model report.
F	Fail. The EUT does not comply with the essential requirements in the standard.

Explanation of worst-case configuration

The worst-case scenario for all measurements is based on the conducted output power measurement investigation results. Output power was measured on QPSK,16QAM modulations. It was found that QPSK was the worst case. All testing was performed using QPSK modulations to represent the worst case unless otherwise stated. The test results shown in the following sections represent the worst case emission.

7. Test Equipment Utilized

NO.	Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
1	Universal Radio Communication Tester	CMU200	108646	R&S	2020-12-24	1 year
2	Spectrum Analyzer	FSU26	200030	R&S	2020-06-03	1 year
3	Climate chamber	SH-242	93008556	ESPEC	2020-12-21	3 year
4	EMI Antenna	VULB9163	9163-235	Schwarzbeck	2020-11-20	1 year
5	EMI Antenna	3117	00058889	ETS-Lindgren	2020-11-18	1 year
6	EMI Antenna	3117	00119021	ETS-Lindgren	2021-01-14	1 year
7	EMI Antenna	9117	167	Schwarzbeck	2020-05-27	1 year
8	Signal Generator	N5183A	MY49060052	R&S	2020-06-24	1 year
9	Test Receiver	E4440A	MY48250642	Agilent	2021-03-12	1 year
10	Universal Radio Communication Tester	CMW500	143008	R&S	2020-11-26	1 year

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation.
In all cases, output power is within the specified limits.

A.1.2 Conducted

A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.
These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each bandwidth.

A.1.2.2 Measurement result

LTE band 2

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1909.3	22.67	21.67
		1880.0	22.52	21.54
		1850.7	22.56	21.81
	1 RB low	1909.3	22.48	21.56
		1880.0	22.33	21.41
		1850.7	22.61	21.75
	50% RB mid	1909.3	22.71	21.93
		1880.0	22.55	21.93
		1850.7	22.42	21.75
	100% RB	1909.3	21.72	20.86
		1880.0	21.71	20.59
		1850.7	21.64	20.52
3MHz	1 RB high	1908.5	22.80	21.56
		1880.0	22.79	21.98
		1851.5	22.55	21.39
	1 RB low	1908.5	22.71	21.67
		1880.0	22.52	21.93
		1851.5	22.55	21.44
	50% RB mid	1908.5	21.75	20.88
		1880.0	21.61	20.71
		1851.5	21.56	20.67

	100% RB	1908.5	21.73	20.70
		1880.0	21.69	20.70
		1851.5	21.61	20.70
5MHz	1 RB high	1907.5	22.72	21.82
		1880.0	22.66	22.06
		1852.5	22.53	21.29
	1 RB low	1907.5	22.78	21.66
		1880.0	22.46	22.10
		1852.5	22.60	21.73
	50% RB mid	1907.5	21.81	20.78
		1880.0	21.63	20.62
		1852.5	21.59	20.59
	100% RB	1907.5	21.74	20.71
		1880.0	21.69	20.70
		1852.5	21.62	20.42
10MHz	1 RB high	1905.0	22.54	21.60
		1880.0	22.84	22.16
		1855.0	22.65	21.81
	1 RB low	1905.0	23.19	21.72
		1880.0	22.46	22.18
		1855.0	23.06	22.03
	50% RB mid	1905.0	21.73	20.81
		1880.0	21.75	20.73
		1855.0	21.72	20.74
	100% RB	1905.0	21.73	20.77
		1880.0	21.63	20.64
		1855.0	21.65	20.64
15MHz	1 RB high	1902.5	22.43	21.85
		1880.0	22.65	21.86
		1857.5	22.54	21.89
	1 RB low	1902.5	22.67	21.68
		1880.0	22.58	21.88
		1857.5	22.64	21.67
	50% RB mid	1902.5	21.71	20.71
		1880.0	21.75	20.61
		1857.5	21.67	20.59
	100% RB	1902.5	21.70	20.64
		1880.0	21.61	20.63
		1857.5	21.58	20.54

20MHz	1 RB high	1900.0	22.20	21.80
		1880.0	22.78	22.36
		1860.0	22.39	22.36
	1 RB low	1900.0	22.95	22.47
		1880.0	22.40	22.41
		1860.0	22.92	22.55
	50% RB mid	1900.0	21.65	20.54
		1880.0	21.71	20.53
		1860.0	21.70	20.60
	100% RB	1900.0	21.68	20.65
		1880.0	21.63	20.57
		1860.0	21.58	20.46

LTE band 5

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	848.3	22.07	20.98
		836.5	22.33	21.17
		824.7	22.11	21.28
	1 RB low	848.3	22.05	21.09
		836.5	22.29	21.10
		824.7	22.15	21.33
	50% RB mid	848.3	22.07	21.40
		836.5	22.11	21.22
		824.7	22.22	21.32
	100% RB	848.3	21.19	20.30
		836.5	21.15	20.35
		824.7	21.19	20.00
3MHz	1 RB high	847.5	22.26	21.01
		836.5	22.16	21.29
		825.5	22.15	21.68
	1 RB low	847.5	22.12	21.19
		836.5	22.27	21.06
		825.5	22.16	21.59
	50% RB mid	847.5	21.31	20.38
		836.5	21.24	20.18
		825.5	21.29	20.35
	100% RB	847.5	21.31	20.18
		836.5	21.16	20.12
		825.5	21.24	20.10
5MHz	1 RB high	846.5	22.28	21.36
		836.5	22.08	21.27
		826.5	22.21	21.29
	1 RB low	846.5	21.90	20.90
		836.5	22.17	21.24
		826.5	22.24	21.32
	50% RB mid	846.5	21.22	20.17
		836.5	21.30	20.36
		826.5	21.29	20.34
	100% RB	846.5	21.14	20.12
		836.5	21.29	20.25
		826.5	21.26	20.37
10MHz	1 RB high	844.0	22.30	21.21
		836.5	22.07	21.11

		829.0	22.19	21.10
	1 RB low	844.0	22.08	21.10
		836.5	22.13	20.99
		829.0	22.04	21.31
	50% RB mid	844.0	21.25	20.37
		836.5	21.35	20.57
		829.0	21.35	20.39
	100% RB	844.0	21.28	20.34
		836.5	21.22	20.27
		829.0	21.32	20.23

LTE band 7

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)	
			QPSK	16QAM
5MHz	1 RB high	2567.5	22.79	21.54
		2535	22.15	21.20
		2502.5	21.72	20.47
	1 RB low	2567.5	22.54	21.57
		2535	22.08	20.97
		2502.5	21.71	20.46
	50% RB mid	2567.5	21.95	21.10
		2535	21.40	20.33
		2502.5	21.15	20.21
	100% RB	2567.5	22.06	21.14
		2535	21.46	20.53
		2502.5	21.02	20.20
10MHz	1 RB high	2565	23.39	22.18
		2535	22.63	22.10
		2505	22.06	21.55
	1 RB low	2565	23.28	22.48
		2535	22.52	21.97
		2505	22.46	21.26
	50% RB mid	2565	22.31	21.43
		2535	21.81	20.71
		2505	21.42	20.59
	100% RB	2565	22.25	21.21
		2535	21.77	20.66
		2505	21.39	20.49
15MHz	1 RB high	2562.5	23.16	22.19
		2535	22.52	22.09
		2507.5	22.16	21.58
	1 RB low	2562.5	23.02	21.96
		2535	22.45	22.25
		2507.5	22.43	21.62
	50% RB mid	2562.5	22.22	21.19
		2535	21.81	20.73
		2507.5	21.34	20.34
	100% RB	2562.5	21.63	20.76
		2535	21.32	20.38
		2507.5	21.38	20.41

20MHz	1 RB high	2560	23.08	23.04
		2535	22.48	22.44
		2510	22.08	22.17
	1 RB low	2560	23.14	22.77
		2535	22.42	22.58
		2510	22.48	22.02
	50% RB mid	2560	22.27	20.54
		2535	21.81	20.36
		2510	21.38	20.50
	100% RB	2560	21.66	20.72
		2535	21.30	20.31
		2510	21.04	19.98

LTE band 12

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	715.3	22.70	21.64
		707.5	22.62	21.41
		699.7	22.46	21.53
	1 RB low	715.3	22.56	21.41
		707.5	22.60	21.35
		699.7	22.49	21.74
	50% RB mid	715.3	22.56	21.55
		707.5	22.70	21.95
		699.7	22.57	21.90
	100% RB	715.3	21.67	20.68
		707.5	21.73	20.86
		699.7	21.64	20.77
3MHz	1 RB high	714.5	23.10	22.01
		707.5	22.73	21.60
		700.5	22.60	21.56
	1 RB low	714.5	22.86	21.66
		707.5	22.74	21.72
		700.5	22.66	21.58
	50% RB mid	714.5	21.85	20.45
		707.5	21.75	20.85
		700.5	21.71	20.71
	100% RB	714.5	21.67	20.69
		707.5	21.75	20.67
		700.5	21.67	20.52
5MHz	1 RB high	713.5	22.75	21.50
		707.5	22.62	21.84
		701.5	22.67	21.46
	1 RB low	713.5	22.73	21.96
		707.5	22.72	21.77
		701.5	22.40	21.40
	50% RB mid	713.5	21.76	20.68
		707.5	21.90	20.87
		701.5	21.59	20.70
	100% RB	713.5	21.75	20.76
		707.5	21.78	20.72
		701.5	21.67	20.57
10MHz	1 RB high	711.0	22.58	21.54
		707.5	22.54	21.53

		704.0	22.69	21.44
	1 RB low	711.0	22.69	21.71
		707.5	22.68	21.52
		704.0	22.62	21.46
	50% RB mid	711.0	21.73	20.89
		707.5	21.80	20.76
		704.0	21.78	20.71
	100% RB	711.0	21.71	20.70
		707.5	21.77	20.76
		704.0	21.82	20.71

LTE band 13

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)	
			QPSK	16QAM
5MHz	1 RB high	784.5	22.46	21.49
		782	22.78	22.02
		779.5	22.63	21.52
	1 RB low	784.5	22.70	21.97
		782	22.73	21.54
		779.5	22.56	21.31
	50% RB mid	784.5	21.80	20.94
		782	21.79	20.92
		779.5	21.88	20.94
	100% RB	784.5	21.79	20.74
		782	21.89	20.83
		779.5	21.83	20.67
10MHz	1 RB high	782.0	22.50	22.38
	1 RB low	782.0	22.68	22.15
	50% RB mid	782.0	21.90	20.95
	100% RB	782.0	21.93	20.83

LTE band 66

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)	
			QPSK	16QAM
1.4MHz	1 RB high	1779.3	22.36	21.52
		1745.0	22.81	21.69
		1710.7	22.79	21.83
	1 RB low	1779.3	22.34	21.45
		1745.0	22.64	21.71
		1710.7	22.74	21.88
	50% RB mid	1779.3	22.45	21.74
		1745.0	22.78	22.21
		1710.7	22.57	21.81
	100% RB	1779.3	21.40	20.72
		1745.0	21.83	21.15
		1710.7	21.62	20.82
3MHz	1 RB high	1778.5	22.62	21.18
		1745.0	22.63	21.47
		1711.5	22.63	21.42
	1 RB low	1778.5	22.30	21.45
		1745.0	22.67	21.53
		1711.5	22.51	21.68
	50% RB mid	1778.5	21.33	20.29
		1745.0	21.64	20.78
		1711.5	21.66	20.78
	100% RB	1778.5	21.41	20.39
		1745.0	21.70	20.80
		1711.5	21.60	20.69
5MHz	1 RB high	1777.5	22.33	21.52
		1745.0	22.58	22.00
		1712.5	22.58	21.74
	1 RB low	1777.5	22.40	21.58
		1745.0	22.37	22.10
		1712.5	22.60	21.36
	50% RB mid	1777.5	21.42	20.48
		1745.0	21.72	20.82
		1712.5	21.65	20.71
	100% RB	1777.5	21.33	20.31
		1745.0	21.64	20.67
		1712.5	21.54	20.53
10MHz	1 RB high	1775.0	22.17	21.09
		1745.0	22.72	21.78

		1715.0	23.07	21.82
	1 RB low	1775.0	22.46	21.24
		1745.0	22.64	21.84
		1715.0	22.56	21.61
	50% RB mid	1775.0	21.29	20.35
		1745.0	21.67	20.82
		1715.0	21.55	20.63
	100% RB	1775.0	21.35	20.39
		1745.0	21.62	20.68
		1715.0	21.49	20.45
15MHz	1 RB high	1772.5	22.06	21.61
		1745.0	22.57	21.59
		1717.5	22.51	21.75
	1 RB low	1772.5	22.38	21.52
		1745.0	22.50	21.95
		1717.5	22.42	21.84
	50% RB mid	1772.5	21.28	20.28
		1745.0	21.70	20.80
		1717.5	21.58	20.58
	100% RB	1772.5	21.32	20.38
		1745.0	21.55	20.51
		1717.5	21.48	20.44
20MHz	1 RB high	1770.0	22.15	22.16
		1745.0	22.95	21.72
		1720.0	22.72	22.33
	1 RB low	1770.0	22.74	22.36
		1745.0	22.68	21.73
		1720.0	22.32	22.30
	50% RB mid	1770.0	21.59	20.50
		1745.0	21.79	20.64
		1720.0	21.72	20.61
	100% RB	1770.0	21.24	20.27
		1745.0	21.61	20.65
		1720.0	21.39	20.48

A.1.3 Radiated

A.1.3.1 Description

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

Rule Part 22.913(a) specifies "Mobile stations are limited to 2.0 watts EIRP.".

Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power". and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 27.50(d) specifies "Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.".

Rule Part 27.50(h)(2) specifies "Mobile stations are limited to 2.0 watts EIRP.".

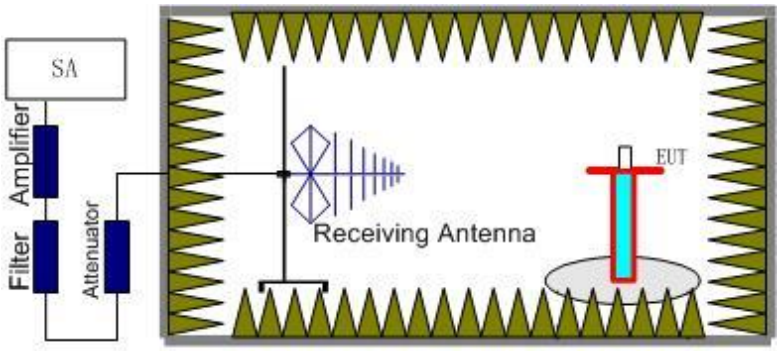
Rule Part 27.50(c) specifies “Portable stations (hand-held de-vices) are limited to 3 watts ERP.”.

Rule Part 27.50(a)(3) specifies "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."

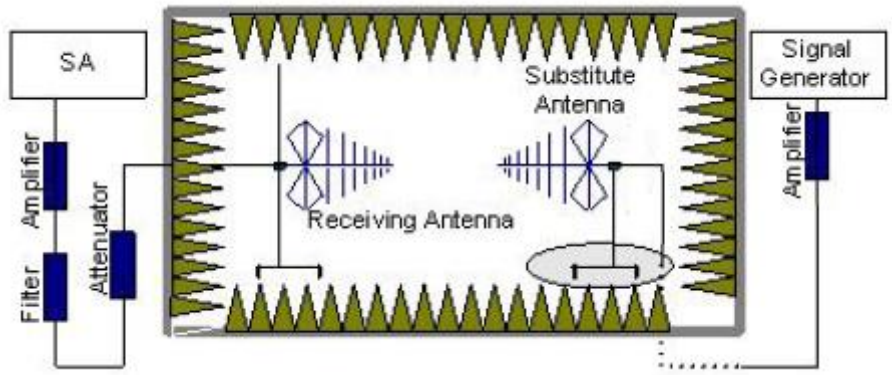
A.1.3.2 Method of Measurement

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

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 transmit frequencies in three channels (High, Middle, Low) were measured with RMS 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, a 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. Adjust the level of the signal generator output until the value of the receiver reaches 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.

4. An amplifier should be connected to the Signal Source output port. And the cable should be connected 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:
   Power (EIRP) = P_{Mea} - P_{Ag} - P_{cl} - G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP - 2.15 .

A.1.3.3 Measurement result

Embedded antenna Measurement Results:

LTE Band 2- EIRP

Limits: ≤33dBm (2W)

LTE Band 2_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.70	-20.95	2.92	43.75	4.87	24.75	33.00	8.25	H
1880.00	-19.72	2.85	43.75	4.82	26.00	33.00	7.00	H
1909.30	-18.92	2.87	43.77	4.76	26.74	33.00	6.26	H

LTE Band 2_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.50	-21.59	2.87	43.75	4.87	24.16	33.00	8.84	H
1880.00	-20.09	2.85	43.75	4.82	25.63	33.00	7.37	H
1908.50	-19.55	2.89	43.78	4.76	26.10	33.00	6.90	H

LTE Band 2_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.50	-21.64	2.87	43.75	4.87	24.11	33.00	8.89	H
1880.00	-20.16	2.85	43.75	4.82	25.56	33.00	7.44	H
1907.50	-19.61	2.84	43.77	4.77	26.09	33.00	6.91	H

LTE Band 2_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.00	-21.43	2.88	43.74	4.86	24.29	33.00	8.71	H
1880.00	-19.86	2.85	43.75	4.82	25.86	33.00	7.14	H
1905.00	-19.53	2.87	43.77	4.77	26.14	33.00	6.86	H

LTE Band 2_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.50	-21.86	2.87	43.75	4.86	23.88	33.00	9.12	H
1880.00	-20.20	2.85	43.75	4.82	25.52	33.00	7.48	H
1902.50	-20.12	2.86	43.77	4.78	25.57	33.00	7.43	H

LTE Band 2_20 MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.00	-21.30	2.86	43.75	4.85	24.44	33.00	8.56	H
1880.00	-21.03	2.85	43.75	4.82	24.69	33.00	8.31	H
1900.00	-20.49	2.87	43.77	4.78	25.19	33.00	7.81	H

LTE Band 2_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.70	-21.85	2.92	43.75	4.87	23.85	33.00	9.15	H
1880.00	-20.79	2.85	43.75	4.82	24.93	33.00	8.07	H
1909.30	-20.07	2.87	43.77	4.76	25.59	33.00	7.41	H

LTE Band 2_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.50	-22.01	2.87	43.75	4.87	23.74	33.00	9.26	H
1880.00	-21.05	2.85	43.75	4.82	24.67	33.00	8.33	H
1908.50	-20.42	2.89	43.78	4.76	25.23	33.00	7.77	H

LTE Band 2_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.50	-22.33	2.87	43.75	4.87	23.42	33.00	9.58	H
1880.00	-21.27	2.85	43.75	4.82	24.45	33.00	8.55	H
1907.50	-20.22	2.84	43.77	4.77	25.48	33.00	7.52	H

LTE Band 2_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.00	-22.14	2.88	43.74	4.86	23.58	33.00	9.42	H
1880.00	-21.03	2.85	43.75	4.82	24.69	33.00	8.31	H
1905.00	-20.69	2.87	43.77	4.77	24.98	33.00	8.02	H

LTE Band 2_15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.50	-23.14	2.87	43.75	4.86	22.60	33.00	10.40	H
1880.00	-20.96	2.85	43.75	4.82	24.76	33.00	8.24	H
1902.50	-20.81	2.86	43.77	4.78	24.88	33.00	8.12	H

LTE Band 2_20 MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.00	-22.69	2.86	43.75	4.85	23.05	33.00	9.95	H
1880.00	-21.89	2.85	43.75	4.82	23.83	33.00	9.17	H
1900.00	-21.05	2.87	43.77	4.78	24.63	33.00	8.37	H

LTE Band 5- ERP

Limits: ≤38.45dBm (7W)

LTE Band 5_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.70	-21.21	2.26	45.79	0.95	2.15	21.12	38.45	17.33	H
836.50	-21.18	2.26	45.66	0.82	2.15	20.89	38.45	17.56	H
848.30	-22.92	2.27	45.55	0.80	2.15	19.01	38.45	19.44	H

LTE Band 5_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.50	-21.77	2.26	45.79	0.94	2.15	20.55	38.45	17.90	H
836.50	-21.20	2.26	45.66	0.82	2.15	20.87	38.45	17.58	H
847.50	-22.76	2.27	45.56	0.81	2.15	19.19	38.45	19.26	H

LTE Band 5_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
826.50	-21.72	2.25	45.77	0.93	2.15	20.58	38.45	17.87	H
836.50	-21.23	2.26	45.66	0.82	2.15	20.84	38.45	17.61	H
846.50	-22.88	2.26	45.56	0.82	2.15	19.09	38.45	19.36	H

LTE Band 5_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
829.00	-21.74	2.13	45.74	0.90	2.15	20.62	38.45	17.83	H
836.50	-21.46	2.26	45.66	0.82	2.15	20.61	38.45	17.84	H
844.00	-22.26	2.26	45.59	0.82	2.15	19.74	38.45	18.71	H

LTE Band 5_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.70	-22.36	2.26	45.79	0.95	2.15	19.97	38.45	18.48	H
836.50	-22.45	2.26	45.66	0.82	2.15	19.62	38.45	18.83	H
848.30	-23.72	2.27	45.55	0.80	2.15	18.21	38.45	20.24	H

LTE Band 5_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.50	-22.58	2.26	45.79	0.94	2.15	19.74	38.45	18.71	H
836.50	-22.08	2.26	45.66	0.82	2.15	19.99	38.45	18.46	H
847.50	-23.82	2.27	45.56	0.81	2.15	18.13	38.45	20.32	H

LTE Band 5_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
826.50	-22.36	2.25	45.77	0.93	2.15	19.94	38.45	18.51	H
836.50	-22.31	2.26	45.66	0.82	2.15	19.76	38.45	18.69	H
846.50	-23.81	2.26	45.56	0.82	2.15	18.16	38.45	20.29	H

LTE Band 5_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
829.00	-22.45	2.13	45.74	0.90	2.15	19.91	38.45	18.54	H
836.50	-22.15	2.26	45.66	0.82	2.15	19.92	38.45	18.53	H
844.00	-23.08	2.26	45.59	0.82	2.15	18.92	38.45	19.53	H

LTE Band 7- EIRP

Limits: ≤33 dBm (2W)

LTE Band 7_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2502.50	-21.22	3.58	45.68	6.10	26.98	33.00	6.02	V
2535.00	-20.51	3.63	44.82	6.16	26.84	33.00	6.16	V
2567.50	-21.02	3.65	44.92	6.22	26.47	33.00	6.53	V

LTE Band 7_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2505.00	-21.19	3.59	45.64	6.11	26.97	33.00	6.03	V
2535.00	-20.41	3.63	44.82	6.16	26.94	33.00	6.06	V
2565.00	-20.52	3.65	44.97	6.22	27.02	33.00	5.98	V

LTE Band 7_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2507.50	-20.67	3.59	44.92	6.11	26.77	33.00	6.23	V
2535.00	-20.38	3.63	44.82	6.16	26.97	33.00	6.03	V
2562.50	-21.49	3.65	45.67	6.21	26.74	33.00	6.26	V

LTE Band 7_20MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2510.00	-20.87	3.58	45.36	6.12	27.03	33.00	5.97	V
2535.00	-20.34	3.63	44.82	6.16	27.01	33.00	5.99	V
2560.00	-21.44	3.64	45.98	6.21	27.11	33.00	5.89	V

LTE Band 7_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2502.50	-22.49	3.58	45.68	6.10	25.71	33.00	7.29	V
2535.00	-21.17	3.63	44.82	6.16	26.18	33.00	6.82	V
2567.50	-21.70	3.65	44.92	6.22	25.79	33.00	7.21	V

LTE Band 7_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2505.00	-21.88	3.59	45.64	6.11	26.28	33.00	6.72	V
2535.00	-21.39	3.63	44.82	6.16	25.96	33.00	7.04	V
2565.00	-21.71	3.65	44.97	6.22	25.83	33.00	7.17	V

LTE Band 7_15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2507.50	-21.27	3.59	44.92	6.11	26.17	33.00	6.83	V
2535.00	-21.29	3.63	44.82	6.16	26.06	33.00	6.94	V
2562.50	-22.74	3.65	45.67	6.21	25.49	33.00	7.51	V

LTE Band 7_20MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2510.00	-22.06	3.58	45.36	6.12	25.84	33.00	7.16	V
2535.00	-20.75	3.63	44.82	6.16	26.60	33.00	6.40	V
2560.00	-22.27	3.64	45.98	6.21	26.28	33.00	6.72	V

LTE Band 12 - ERP

Limits: ≤34.77dBm (3W)

LTE Band 12_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
699.70	-19.31	1.90	44.66	0.77	2.15	22.07	34.77	12.70	H
707.50	-19.29	1.91	44.94	0.62	2.15	22.21	34.77	12.56	H
715.30	-19.06	1.92	45.26	0.50	2.15	22.63	34.77	12.14	H

LTE Band 12_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
700.50	-19.35	1.90	44.68	0.76	2.15	22.04	34.77	12.73	H
707.50	-19.27	1.91	44.94	0.62	2.15	22.23	34.77	12.54	H
714.50	-19.32	1.92	45.26	0.50	2.15	22.37	34.77	12.40	H

LTE Band 12_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
701.50	-19.71	1.90	44.81	0.74	2.15	21.79	34.77	12.98	H
707.50	-19.37	1.91	44.94	0.62	2.15	22.13	34.77	12.64	H
713.50	-19.27	1.92	45.22	0.50	2.15	22.38	34.77	12.39	H

LTE Band 12_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
704.00	-19.40	1.91	44.93	0.70	2.15	22.17	34.77	12.60	H
707.50	-19.14	1.91	44.94	0.62	2.15	22.36	34.77	12.41	H
711.00	-18.83	1.92	45.19	0.53	2.15	22.82	34.77	11.95	H

LTE Band 12_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
699.70	-20.08	1.90	44.66	0.77	2.15	21.30	34.77	13.47	H
707.50	-19.68	1.91	44.94	0.62	2.15	21.82	34.77	12.95	H
715.30	-20.29	1.92	45.26	0.50	2.15	21.40	34.77	13.37	H

LTE Band 12_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
700.50	-19.95	1.90	44.68	0.76	2.15	21.44	34.77	13.33	H
707.50	-20.22	1.91	44.94	0.62	2.15	21.28	34.77	13.49	H
714.50	-20.34	1.92	45.26	0.50	2.15	21.35	34.77	13.42	H

LTE Band 12_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
701.50	-19.76	1.90	44.81	0.74	2.15	21.74	34.77	13.03	H
707.50	-20.54	1.91	44.94	0.62	2.15	20.96	34.77	13.81	H
713.50	-19.79	1.92	45.22	0.50	2.15	21.86	34.77	12.91	H

LTE Band 12_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
704.00	-19.81	1.91	44.93	0.70	2.15	21.76	34.77	13.01	H
707.50	-20.04	1.91	44.94	0.62	2.15	21.46	34.77	13.31	H
711.00	-20.04	1.92	45.19	0.53	2.15	21.61	34.77	13.16	H

LTE Band 13- ERP

Limits: ≤34.77 dBm (3W)

LTE Band 13_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
779.50	-20.85	2.01	45.64	0.04	2.15	20.67	34.77	14.10	H
782.00	-21.03	2.01	45.65	0.09	2.15	20.55	34.77	14.22	H
784.50	-21.01	2.01	45.67	0.16	2.15	20.66	34.77	14.11	H

LTE Band 13_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
782.00	-21.18	2.01	45.65	0.09	2.15	20.40	34.77	14.37	H

LTE Band 13_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
779.50	-21.50	2.01	45.64	0.04	2.15	20.02	34.77	14.75	H
782.00	-22.14	2.01	45.65	0.09	2.15	19.44	34.77	15.33	H
784.50	-21.60	2.01	45.67	0.16	2.15	20.07	34.77	14.70	H

LTE Band 13_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
782.00	-22.23	2.01	45.65	0.09	2.15	19.35	34.77	15.42	H

LTE Band 66- EIRP

Limits: ≤30dBm (1W)

LTE Band 66_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.70	-27.57	3.17	44.10	5.12	24.82	30.00	5.18	H
1745.00	-27.44	3.68	44.16	5.06	25.46	30.00	4.54	H
1779.30	-25.41	3.04	44.03	5.00	26.66	30.00	3.34	H

LTE Band 66_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.50	-27.84	3.40	44.10	5.12	24.78	30.00	5.22	H
1745.00	-27.58	3.68	44.16	5.06	25.32	30.00	4.68	H
1778.50	-25.78	3.04	44.03	5.00	26.29	30.00	3.71	H

LTE Band 66_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.50	-20.88	3.66	44.10	5.12	24.68	30.00	5.32	H
1745.00	-20.26	3.68	44.16	5.06	25.28	30.00	4.72	H
1777.50	-19.87	3.04	44.04	5.00	26.13	30.00	3.87	H

LTE Band 66_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.00	-20.79	3.56	44.10	5.11	24.86	30.00	5.14	H
1745.00	-20.12	3.68	44.16	5.06	25.42	30.00	4.58	H
1775.00	-19.64	3.05	44.05	5.01	26.36	30.00	3.64	H

LTE Band 66_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.50	-20.96	3.47	44.11	5.11	24.79	30.00	5.21	H
1745.00	-20.54	3.68	44.16	5.06	25.00	30.00	5.00	H
1772.50	-20.28	3.05	44.06	5.01	25.74	30.00	4.26	H

LTE Band 66_20MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.00	-21.13	3.37	44.11	5.10	24.71	30.00	5.29	H
1745.00	-20.31	3.68	44.16	5.06	25.23	30.00	4.77	H
1770.00	-19.97	3.05	44.07	5.01	26.07	30.00	3.93	H

LTE Band 66_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.70	-28.77	3.17	44.10	5.12	23.62	30.00	6.38	H
1745.00	-27.89	3.68	44.16	5.06	25.01	30.00	4.99	H
1779.30	-26.33	3.04	44.03	5.00	25.74	30.00	4.26	H

LTE Band 66_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.50	-29.07	3.40	44.10	5.12	23.55	30.00	6.45	H
1745.00	-27.98	3.68	44.16	5.06	24.92	30.00	5.08	H
1778.50	-26.66	3.04	44.03	5.00	25.41	30.00	4.59	H

LTE Band 66_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.50	-22.07	3.66	44.10	5.12	23.49	30.00	6.51	H
1745.00	-20.73	3.68	44.16	5.06	24.81	30.00	5.19	H
1777.50	-21.17	3.04	44.04	5.00	24.83	30.00	5.17	H

LTE Band 66_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.00	-22.00	3.56	44.10	5.11	23.65	30.00	6.35	H
1745.00	-20.57	3.68	44.16	5.06	24.97	30.00	5.03	H
1775.00	-20.54	3.05	44.05	5.01	25.46	30.00	4.54	H

LTE Band 66_15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.50	-22.20	3.47	44.11	5.11	23.55	30.00	6.45	H
1745.00	-21.15	3.68	44.16	5.06	24.39	30.00	5.61	H
1772.50	-21.46	3.05	44.06	5.01	24.56	30.00	5.44	H

LTE Band 66_20MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.00	-22.34	3.37	44.11	5.10	23.50	30.00	6.50	H
1745.00	-21.36	3.68	44.16	5.06	24.18	30.00	5.82	H
1770.00	-20.74	3.05	44.07	5.01	25.30	30.00	4.70	H

External antenna Measurement Results:

LTE Band 2- EIRP

Limits: ≤33dBm (2W)

LTE Band 2_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.70	-18.82	2.92	43.75	4.87	26.88	33.00	6.12	V
1880.00	-17.34	2.85	43.75	4.82	28.38	33.00	4.62	V
1909.30	-18.74	2.87	43.77	4.76	26.92	33.00	6.08	H

LTE Band 2_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.50	-19.09	2.87	43.75	4.87	26.66	33.00	6.34	V
1880.00	-17.76	2.85	43.75	4.82	27.96	33.00	5.04	V
1908.50	-18.89	2.89	43.78	4.76	26.76	33.00	6.24	H

LTE Band 2_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.50	-19.29	2.87	43.75	4.87	26.46	33.00	6.54	V
1880.00	-18.05	2.85	43.75	4.82	27.67	33.00	5.33	V
1907.50	-19.41	2.84	43.77	4.77	26.29	33.00	6.71	H

LTE Band 2_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.00	-19.04	2.88	43.74	4.86	26.68	33.00	6.32	V
1880.00	-17.52	2.85	43.75	4.82	28.20	33.00	4.80	V
1905.00	-19.08	2.87	43.77	4.77	26.59	33.00	6.41	V

LTE Band 2_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.50	-19.10	2.87	43.75	4.86	26.64	33.00	6.36	V
1880.00	-17.65	2.85	43.75	4.82	28.07	33.00	4.93	V
1902.50	-19.58	2.86	43.77	4.78	26.11	33.00	6.89	H

LTE Band 2_20 MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.00	-18.84	2.86	43.75	4.85	26.90	33.00	6.10	V
1880.00	-18.32	2.85	43.75	4.82	27.40	33.00	5.60	V
1900.00	-19.45	2.87	43.77	4.78	26.23	33.00	6.77	V

LTE Band 2_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.70	-19.69	2.92	43.75	4.87	26.01	33.00	6.99	V
1880.00	-18.52	2.85	43.75	4.82	27.20	33.00	5.80	V
1909.30	-19.69	2.87	43.77	4.76	25.97	33.00	7.03	H

LTE Band 2_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.50	-20.43	2.87	43.75	4.87	25.32	33.00	7.68	V
1880.00	-18.79	2.85	43.75	4.82	26.93	33.00	6.07	V
1908.50	-19.95	2.89	43.78	4.76	25.70	33.00	7.30	H

LTE Band 2_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.50	-20.34	2.87	43.75	4.87	25.41	33.00	7.59	V
1880.00	-18.51	2.85	43.75	4.82	27.21	33.00	5.79	V
1907.50	-19.96	2.84	43.77	4.77	25.74	33.00	7.26	H

LTE Band 2_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.00	-19.66	2.88	43.74	4.86	26.06	33.00	6.94	V
1880.00	-18.62	2.85	43.75	4.82	27.10	33.00	5.90	V
1905.00	-20.24	2.87	43.77	4.77	25.43	33.00	7.57	V

LTE Band 2_15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.50	-19.96	2.87	43.75	4.86	25.78	33.00	7.22	V
1880.00	-18.74	2.85	43.75	4.82	26.98	33.00	6.02	V
1902.50	-20.30	2.86	43.77	4.78	25.39	33.00	7.61	H

LTE Band 2_20 MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.00	-19.34	2.86	43.75	4.85	26.40	33.00	6.60	V
1880.00	-18.88	2.85	43.75	4.82	26.84	33.00	6.16	V
1900.00	-20.55	2.87	43.77	4.78	25.13	33.00	7.87	V

LTE Band 5- ERP

Limits: ≤38.45dBm (7W)

LTE Band 5_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.70	-20.12	2.26	45.79	0.95	2.15	22.21	38.45	16.24	H
836.50	-20.78	2.26	45.66	0.82	2.15	21.29	38.45	17.16	H
848.30	-20.67	2.27	45.55	0.80	2.15	21.26	38.45	17.19	H

LTE Band 5_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.50	-21.34	2.26	45.79	0.94	2.15	20.98	38.45	17.47	V
836.50	-21.34	2.26	45.66	0.82	2.15	20.73	38.45	17.72	V
847.50	-21.08	2.27	45.56	0.81	2.15	20.87	38.45	17.58	H

LTE Band 5_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
826.50	-21.72	2.25	45.77	0.93	2.15	20.58	38.45	17.87	V
836.50	-21.29	2.26	45.66	0.82	2.15	20.78	38.45	17.67	H
846.50	-20.91	2.26	45.56	0.82	2.15	21.06	38.45	17.39	H

LTE Band 5_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
829.00	-21.58	2.13	45.74	0.90	2.15	20.78	38.45	17.67	V
836.50	-20.93	2.26	45.66	0.82	2.15	21.14	38.45	17.31	H
844.00	-21.04	2.26	45.59	0.82	2.15	20.96	38.45	17.49	H

LTE Band 5_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.70	-20.94	2.26	45.79	0.95	2.15	21.39	38.45	17.06	H
836.50	-21.86	2.26	45.66	0.82	2.15	20.21	38.45	18.24	H
848.30	-21.42	2.27	45.55	0.80	2.15	20.51	38.45	17.94	H

LTE Band 5_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.50	-22.31	2.26	45.79	0.94	2.15	20.01	38.45	18.44	V
836.50	-22.23	2.26	45.66	0.82	2.15	19.84	38.45	18.61	V
847.50	-21.65	2.27	45.56	0.81	2.15	20.30	38.45	18.15	H

LTE Band 5_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
826.50	-22.08	2.25	45.77	0.93	2.15	20.22	38.45	18.23	V
836.50	-22.18	2.26	45.66	0.82	2.15	19.89	38.45	18.56	H
846.50	-21.56	2.26	45.56	0.82	2.15	20.41	38.45	18.04	H

LTE Band 5_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
829.00	-22.47	2.13	45.74	0.90	2.15	19.89	38.45	18.56	V
836.50	-21.89	2.26	45.66	0.82	2.15	20.18	38.45	18.27	H
844.00	-21.83	2.26	45.59	0.82	2.15	20.17	38.45	18.28	H

LTE Band 7- EIRP

Limits: ≤33 dBm (2W)

LTE Band 7_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2502.50	-20.96	3.58	45.68	6.10	27.24	33.00	5.76	V
2535.00	-20.67	3.63	44.82	6.16	26.68	33.00	6.32	V
2567.50	-19.26	3.65	44.92	6.22	28.23	33.00	4.77	V

LTE Band 7_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2505.00	-20.41	3.59	45.64	6.11	27.75	33.00	5.25	V
2535.00	-20.77	3.63	44.82	6.16	26.58	33.00	6.42	V
2565.00	-19.01	3.65	44.97	6.22	28.53	33.00	4.47	V

LTE Band 7_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2507.50	-20.18	3.59	44.92	6.11	27.26	33.00	5.74	V
2535.00	-20.55	3.63	44.82	6.16	26.80	33.00	6.20	V
2562.50	-19.60	3.65	45.67	6.21	28.63	33.00	4.37	V

LTE Band 7_20MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2510.00	-20.39	3.58	45.36	6.12	27.51	33.00	5.49	V
2535.00	-20.55	3.63	44.82	6.16	26.80	33.00	6.20	V
2560.00	-19.94	3.64	45.98	6.21	28.61	33.00	4.39	V

LTE Band 7_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2502.50	-21.98	3.58	45.68	6.10	26.22	33.00	6.78	V
2535.00	-21.48	3.63	44.82	6.16	25.87	33.00	7.13	V
2567.50	-19.73	3.65	44.92	6.22	27.76	33.00	5.24	V

LTE Band 7_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2505.00	-21.72	3.59	45.64	6.11	26.44	33.00	6.56	V
2535.00	-21.55	3.63	44.82	6.16	25.80	33.00	7.20	V
2565.00	-19.85	3.65	44.97	6.22	27.69	33.00	5.31	V

LTE Band 7_15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2507.50	-21.17	3.59	44.92	6.11	26.27	33.00	6.73	V
2535.00	-21.41	3.63	44.82	6.16	25.94	33.00	7.06	V
2562.50	-20.76	3.65	45.67	6.21	27.47	33.00	5.53	V

LTE Band 7_20MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2510.00	-21.45	3.58	45.36	6.12	26.45	33.00	6.55	V
2535.00	-21.31	3.63	44.82	6.16	26.04	33.00	6.96	V
2560.00	-20.77	3.64	45.98	6.21	27.78	33.00	5.22	V

LTE Band 12 - ERP

Limits: ≤34.77dBm (3W)

LTE Band 12_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
699.70	-20.28	1.90	44.66	0.77	2.15	21.10	34.77	13.67	V
707.50	-20.14	1.91	44.94	0.62	2.15	21.36	34.77	13.41	V
715.30	-20.42	1.92	45.26	0.50	2.15	21.27	34.77	13.50	V

LTE Band 12_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
700.50	-20.46	1.90	44.68	0.76	2.15	20.93	34.77	13.84	V
707.50	-20.43	1.91	44.94	0.62	2.15	21.07	34.77	13.70	H
714.50	-20.73	1.92	45.26	0.50	2.15	20.96	34.77	13.81	V

LTE Band 12_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
701.50	-20.57	1.90	44.81	0.74	2.15	20.93	34.77	13.84	V
707.50	-20.57	1.91	44.94	0.62	2.15	20.93	34.77	13.84	H
713.50	-20.82	1.92	45.22	0.50	2.15	20.83	34.77	13.94	V

LTE Band 12_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
704.00	-20.56	1.91	44.93	0.70	2.15	21.01	34.77	13.76	H
707.50	-20.43	1.91	44.94	0.62	2.15	21.07	34.77	13.70	H
711.00	-20.54	1.92	45.19	0.53	2.15	21.11	34.77	13.66	V

LTE Band 12_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
699.70	-20.96	1.90	44.66	0.77	2.15	20.42	34.77	14.35	H
707.50	-21.02	1.91	44.94	0.62	2.15	20.48	34.77	14.29	H
715.30	-21.48	1.92	45.26	0.50	2.15	20.21	34.77	14.56	V

LTE Band 12_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
700.50	-21.10	1.90	44.68	0.76	2.15	20.29	34.77	14.48	H
707.50	-21.46	1.91	44.94	0.62	2.15	20.04	34.77	14.73	V
714.50	-21.54	1.92	45.26	0.50	2.15	20.15	34.77	14.62	V

LTE Band 12_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
701.50	-21.27	1.90	44.81	0.74	2.15	20.23	34.77	14.54	H
707.50	-21.13	1.91	44.94	0.62	2.15	20.37	34.77	14.40	V
713.50	-21.60	1.92	45.22	0.50	2.15	20.05	34.77	14.72	H

LTE Band 12_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
704.00	-21.07	1.91	44.93	0.70	2.15	20.50	34.77	14.27	H
707.50	-21.21	1.91	44.94	0.62	2.15	20.29	34.77	14.48	H
711.00	-21.53	1.92	45.19	0.53	2.15	20.12	34.77	14.65	V

LTE Band 13- ERP

Limits: ≤34.77 dBm (3W)

LTE Band 13_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
779.50	-21.32	2.01	45.64	0.04	2.15	20.20	34.77	14.57	V
782.00	-20.93	2.01	45.65	0.09	2.15	20.65	34.77	14.12	V
784.50	-20.92	2.01	45.67	0.16	2.15	20.75	34.77	14.02	V

LTE Band 13_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
782.00	-20.56	2.01	45.65	0.09	2.15	21.02	34.77	13.75	V

LTE Band 13_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
779.50	-21.72	2.01	45.64	0.04	2.15	19.80	34.77	14.97	V
782.00	-22.04	2.01	45.65	0.09	2.15	19.54	34.77	15.23	V
784.50	-21.47	2.01	45.67	0.16	2.15	20.20	34.77	14.57	V

LTE Band 13_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	Correction (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
782.00	-21.76	2.01	45.65	0.09	2.15	19.82	34.77	14.95	V

LTE Band 66- EIRP

Limits: ≤30dBm (1W)

LTE Band 66_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.70	-25.06	3.17	44.10	5.12	27.33	30.00	2.67	H
1745.00	-25.20	3.68	44.16	5.06	27.70	30.00	2.30	H
1779.30	-23.29	3.04	44.03	5.00	28.78	30.00	1.22	H

LTE Band 66_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.50	-25.13	3.40	44.10	5.12	27.49	30.00	2.51	H
1745.00	-25.17	3.68	44.16	5.06	27.73	30.00	2.27	H
1778.50	-23.23	3.04	44.03	5.00	28.84	30.00	1.16	H

LTE Band 66_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.50	-18.12	3.66	44.10	5.12	27.44	30.00	2.56	H
1745.00	-17.85	3.68	44.16	5.06	27.69	30.00	2.31	H
1777.50	-17.47	3.04	44.04	5.00	28.53	30.00	1.47	V

LTE Band 66_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.00	-18.03	3.56	44.10	5.11	27.62	30.00	2.38	H
1745.00	-17.94	3.68	44.16	5.06	27.60	30.00	2.40	H
1775.00	-17.18	3.05	44.05	5.01	28.82	30.00	1.18	H

LTE Band 66_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.50	-18.39	3.47	44.11	5.11	27.36	30.00	2.64	H
1745.00	-17.91	3.68	44.16	5.06	27.63	30.00	2.37	H
1772.50	-17.53	3.05	44.06	5.01	28.49	30.00	1.51	V

LTE Band 66_20MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.00	-18.52	3.37	44.11	5.10	27.32	30.00	2.68	H
1745.00	-17.80	3.68	44.16	5.06	27.74	30.00	2.26	H
1770.00	-17.37	3.05	44.07	5.01	28.67	30.00	1.33	H

LTE Band 66_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.70	-25.81	3.17	44.10	5.12	26.58	30.00	3.42	H
1745.00	-26.21	3.68	44.16	5.06	26.69	30.00	3.31	V
1779.30	-23.75	3.04	44.03	5.00	28.32	30.00	1.68	H

LTE Band 66_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.50	-26.04	3.40	44.10	5.12	26.58	30.00	3.42	H
1745.00	-26.08	3.68	44.16	5.06	26.82	30.00	3.18	H
1778.50	-23.68	3.04	44.03	5.00	28.39	30.00	1.61	H

LTE Band 66_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.50	-19.03	3.66	44.10	5.12	26.53	30.00	3.47	H
1745.00	-18.79	3.68	44.16	5.06	26.75	30.00	3.25	H
1777.50	-18.16	3.04	44.04	5.00	27.84	30.00	2.16	H

LTE Band 66_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.00	-18.92	3.56	44.10	5.11	26.73	30.00	3.27	H
1745.00	-18.62	3.68	44.16	5.06	26.92	30.00	3.08	H
1775.00	-17.98	3.05	44.05	5.01	28.02	30.00	1.98	H

LTE Band 66_15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.50	-19.25	3.47	44.11	5.11	26.50	30.00	3.50	H
1745.00	-18.53	3.68	44.16	5.06	27.01	30.00	2.99	H
1772.50	-18.49	3.05	44.06	5.01	27.53	30.00	2.47	V

LTE Band 66_20MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.00	-19.39	3.37	44.11	5.10	26.45	30.00	3.55	H
1745.00	-18.89	3.68	44.16	5.06	26.65	30.00	3.35	H
1770.00	-18.25	3.05	44.07	5.01	27.79	30.00	2.21	H

Peak EIRP(dBm) = P_{Mea}(-22.23dBm) - G_a (-5.00dBi) - P_{Ag} (-44.03dB) - P_{cl} (3.04dB) = 28.84dBm

Note: Expanded measurement uncertainty is U = 2.84 dB, k = 2.

A.2 EMISSION LIMIT

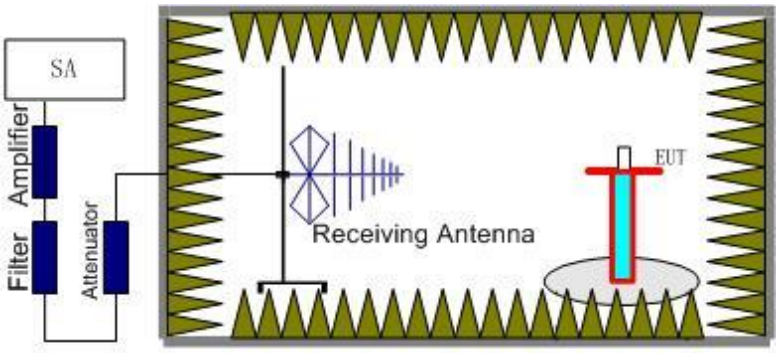
A.2.1 Measurement Method

The measurements procedures in TIA-603E-2016 are used. This measurement is carried out in fully-anechoic chamber FAC-3.

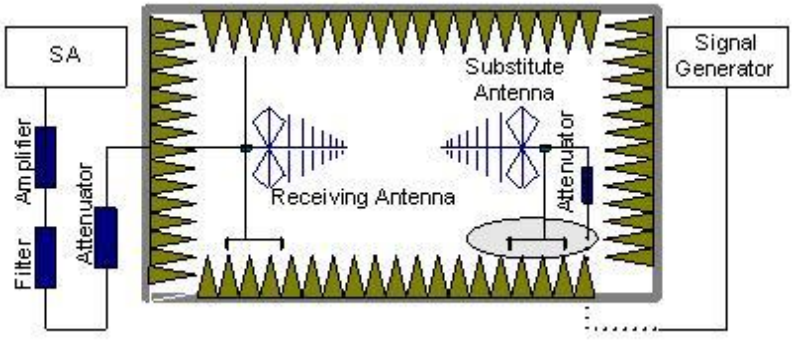
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of each LTE Band.

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 10th harmonic 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 (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches 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.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
   An amplifier should be connected in for the test.
   The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
   The measurement results are obtained as described below:
   Power (EIRP)=P_{Mea}+ P_{pl} + G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dB.

A.2.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53(h) 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.

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

Part 27.53(c) states for operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 +

10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.
Part 27.53(f) states for operations in the 746–758 MHz,775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals.
Part 27.53(g) states for operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of each LTE Band. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of each LTE Band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.The evaluated frequency range is from 30MHz to 26GHz.

Embedded antenna Measurement Results:

LTE Band 2, 1.4MHz, QPSK, Channel 18607

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3702.02	-45.70	6.42	8.48	-43.64	-13.00	30.64	H
5552.02	-46.94	7.18	10.59	-43.53	-13.00	30.53	H
7404.01	-31.79	8.13	12.08	-27.84	-13.00	14.84	H
9265.01	-41.08	9.07	13.26	-36.89	-13.00	23.89	V
11105.01	-49.41	9.81	13.18	-46.04	-13.00	33.04	V
12961.01	-48.03	10.48	13.48	-45.03	-13.00	32.03	H

LTE Band 2, 1.4MHz, QPSK, Channel 18900

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760.02	-42.27	6.26	8.56	-39.97	-13.00	26.97	V
5640.02	-44.88	7.27	10.57	-41.58	-13.00	28.58	H
7522.01	-31.56	8.30	12.22	-27.64	-13.00	14.64	H
9401.01	-43.44	9.04	13.34	-39.14	-13.00	26.14	H
11302.01	-47.92	10.00	13.14	-44.78	-13.00	31.78	V
13166.01	-47.50	10.65	13.73	-44.42	-13.00	31.42	H

LTE Band 2, 1.4MHz, QPSK, Channel 19193

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3819.02	-40.11	6.08	8.65	-37.54	-13.00	24.54	V
5728.02	-38.63	7.30	10.55	-35.38	-13.00	22.38	H
7639.01	-30.21	8.15	12.31	-26.05	-13.00	13.05	H
9554.01	-41.23	9.35	13.35	-37.23	-13.00	24.23	V
11461.01	-46.77	9.91	13.11	-43.57	-13.00	30.57	H
13372.01	-44.71	10.57	14.02	-41.26	-13.00	28.26	H

LTE Band 5, 1.4MHz, QPSK, Channel 20407

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1650.01	-56.37	3.57	5.23	2.15	-56.86	-13.00	43.86	V
2476.00	-48.59	4.60	6.03	2.15	-49.31	-13.00	36.31	V
3299.02	-46.03	5.29	7.72	2.15	-45.75	-13.00	32.75	V
4137.02	-54.83	6.06	9.04	2.15	-54.00	-13.00	41.00	H
4952.01	-53.90	6.69	9.85	2.15	-52.89	-13.00	39.89	V
5769.01	-53.39	7.24	10.55	2.15	-52.23	-13.00	39.23	V

LTE Band 5, 1.4MHz, QPSK, Channel 20525

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.01	-55.70	3.58	5.19	2.15	-56.24	-13.00	43.24	H
2510.00	-51.98	4.63	6.12	2.15	-52.64	-13.00	39.64	H
3346.02	-44.52	5.31	7.83	2.15	-44.15	-13.00	31.15	V
4188.02	-54.34	6.18	9.09	2.15	-53.58	-13.00	40.58	V
5024.01	-54.20	6.56	9.93	2.15	-52.98	-13.00	39.98	V
5850.01	-53.20	7.23	10.53	2.15	-52.05	-13.00	39.05	V

LTE Band 5, 1.4MHz, QPSK, Channel 20643

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1697.01	-54.64	3.60	5.15	2.15	-55.24	-13.00	42.24	H
2547.00	-52.91	4.67	6.18	2.15	-53.55	-13.00	40.55	H
3394.02	-49.86	5.36	7.95	2.15	-49.42	-13.00	36.42	V
4244.02	-53.73	6.25	9.14	2.15	-52.99	-13.00	39.99	V
5094.01	-53.61	6.76	10.03	2.15	-52.49	-13.00	39.49	H
5952.01	-52.33	7.47	10.51	2.15	-51.44	-13.00	38.44	V

LTE Band 7, 5 MHz, QPSK, Channel 20775

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5008.02	-36.87	6.59	9.91	-33.55	-25.00	8.55	V
7511.01	-33.48	8.35	12.21	-29.62	-25.00	4.62	V
10029.01	-47.98	9.26	12.91	-44.33	-25.00	19.33	H
12514.01	-48.54	10.21	13.21	-45.54	-25.00	20.54	H
15015.00	-45.86	11.24	13.99	-43.11	-25.00	18.11	V
17529.00	-44.10	12.84	14.94	-42.00	-25.00	17.00	V

LTE Band 7, 5 MHz, QPSK, Channel 21100

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5077.02	-37.19	6.71	10.01	-33.89	-25.00	8.89	V
7612.01	-33.19	8.03	12.29	-28.93	-25.00	3.93	V
10144.01	-47.97	9.39	12.96	-44.40	-25.00	19.40	H
12677.01	-46.08	10.34	13.31	-43.11	-25.00	18.11	H
15224.00	-45.17	11.37	13.87	-42.67	-25.00	17.67	V
17757.00	-43.02	12.50	15.26	-40.26	-25.00	15.26	H

LTE Band 7, 5 MHz, QPSK, Channel 21425

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5141.02	-34.09	6.87	10.10	-30.86	-25.00	5.86	V
7708.01	-30.73	8.42	12.37	-26.78	-25.00	1.78	V
10289.01	-46.79	9.61	13.02	-43.38	-25.00	18.38	H
12839.01	-46.80	10.67	13.40	-44.07	-25.00	19.07	H
15392.00	-44.83	11.38	13.76	-42.45	-25.00	17.45	V
17979.00	-44.43	12.90	15.57	-41.76	-25.00	16.76	H

LTE Band 12, 1.4MHz, QPSK, Channel 23017

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1400.01	-49.92	3.24	4.98	2.15	-50.33	-13.00	37.33	H
2099.00	-50.45	4.19	4.90	2.15	-51.89	-13.00	38.89	V
2799.00	-46.27	4.91	6.64	2.15	-46.69	-13.00	33.69	V
3505.02	-53.47	5.53	8.21	2.15	-52.94	-13.00	39.94	H
4185.02	-53.87	6.17	9.09	2.15	-53.10	-13.00	40.10	H
4886.01	-54.01	6.72	9.79	2.15	-53.09	-13.00	40.09	V

LTE Band 12, 1.4MHz, QPSK, Channel 23095

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1415.01	-40.67	3.25	5.06	2.15	-41.01	-13.00	28.01	V
2123.00	-52.00	4.21	4.97	2.15	-53.39	-13.00	40.39	V
2830.00	-39.91	4.95	6.69	2.15	-40.32	-13.00	27.32	V
3538.02	-54.01	5.70	8.25	2.15	-53.61	-13.00	40.61	V
4231.02	-54.29	6.26	9.13	2.15	-53.57	-13.00	40.57	V
4961.01	-54.27	6.67	9.86	2.15	-53.23	-13.00	40.23	V

LTE Band 12, 1.4MHz, QPSK, Channel 23173

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1431.01	-37.30	3.28	5.14	2.15	-37.59	-13.00	24.59	H
2146.00	-48.94	4.24	5.04	2.15	-50.29	-13.00	37.29	V
2862.00	-39.85	4.96	6.75	2.15	-40.21	-13.00	27.21	V
3577.02	-52.96	6.10	8.31	2.15	-52.90	-13.00	39.90	V
4286.02	-54.45	6.21	9.19	2.15	-53.62	-13.00	40.62	H
4994.01	-53.99	6.61	9.89	2.15	-52.86	-13.00	39.86	H