RF TEST REPORT

Applicant	Shanghai Smawave Technology Co. ,Ltd
FCC ID	2AU8HMGM5607A
Product	LTE Module
Brand	Smawave
Model	MGM5607A
Report No.	R2001A0008-R3V1
Issue Date	March 4, 2020

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in**FCC CFR47 Part 2/FCC CFR 47 Part 90Z**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Peng Tao *Approved by: Kai Xu*

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TABLE OF CONTENT

Summary of measurement results

No.	Test Case	Clause in FCC rules	Verdict
1	RF Power Output & Effective Isotropic Radiated Power	2.1046/90.1321(a)	PASS
2	Occupied Bandwidth	2.1049	PASS
3	Band Edges Compliance	2.1051/ 90.1323	PASS
4	Emission Mask	90.210(b)	PASS
5	Frequency Stability	2.1055	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 90.1323	PASS
7	Field Strength of Spurious Radiation / Radiated Spurious Emissions	2.1053/ 90.1323	PASS
Date of Testing: January 6, 2020 ~ February 26, 2020			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

Note: This revised report (Report No.: R2001A0008-R3V1) supersedes and replaces the previously issued report (Report No.: R2001A0008-R3). Please discard or destroy the previously issued report and dispose of it accordingly.

1. Test Laboratory

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
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E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.3. Applicant and Manufacturer Information

Applicant	Shanghai Smawave Technology Co. ,Ltd
Applicant address	3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China
Manufacturer	Shanghai Smawave Technology Co. ,Ltd
Manufacturer address	3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China

2.4. General Information

EUT Description			
Model	MGM5607A		
IMEI	123456798213142		
Hardware Version	V1.0		
Software Version	MG56_V1.0.0		
Power Supply	External power supply		
Antenna Type	Internal Antenna		
Antenna Gain	3.18dBi		
Test Mode(s)	LTE Band 43/48;		
Test Modulation	QPSK 16QAM 64QAM;		
Maximum E.I.R.P.	LTE Band 43:	25.31dBm	
	LTE Band 48:	26.17dBm	
Rated Power Supply Voltage	3.3V		
Extreme Voltage	Minimum: 3V	Maximum: 3.6V	
Extreme Temperature	Lowest: -40°C	Highest: +70°C	
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	LTE Band 43	3650 ~ 3700	3650 ~ 3700
	LTE Band 48	3650 ~ 3700	3650 ~ 3700
Note: The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:
FCC CFR 47 Part 90Z (2019)

ANSI C63.26 (2015)

Reference standard:

FCC CFR47 Part 2 (2019)

FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

FCC KDB 552295 D01 CBP Guidance for 3650 3700 Band v03

4. Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (X axis, horizontal polarization) and the worst case was recorded.

All mode and data rates and positions were investigated.
The following testing in LTE is set based on the maximum RF Output Power.

Test modes are chosen as the worst case configuration below for LTE Band 43/48;

Test items	LTE Band	Bandwidth (MHz)				Modulation			RB			Test Channel		
		5	10	15	20	QPSK	16QAM	64QAM	1	50%	100%	L	M	H
RF power output	43	O	O	O	O	O	O	O	O	O	O	O	O	O
	48	O	O	O	O	O	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	43	O	O	O	O	O	O	O	O	O	O	O	O	O
	48	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	43	O	O	O	O	O	O	O	-	-	O	O	O	O
	48	O	O	O	O	O	O	O	-	-	O	O	O	O
Emission Mask	43	O	O	O	O	O	O	O	O	-	O	O	-	O
	48	O	O	O	O	O	O	O	O	-	O	O	-	O
Frequency Stability	43	O	O	O	O	O	O	O	-	-	O	-	O	-
	48	O	O	O	O	O	O	O	-	-	O	-	O	-
Spurious Emissions at Antenna Terminals	43	O	O	O	O	O	-	-	O	-	-	O	O	O
	48	O	O	O	O	O	-	-	O	-	-	O	O	O
Field Strength of Spurious Radiation/ Radiates Spurious Emission	43	O	-	-	O	O	-	-	O	-	-	-	O	-
	48	O	-	-	O	O	-	-	O	-	-	-	O	-
Note		1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.												

5. Test Case Results

5.3. RF Power Output & Effective Isotropic Radiated Power& the Peak EIRP Density

Ambient condition

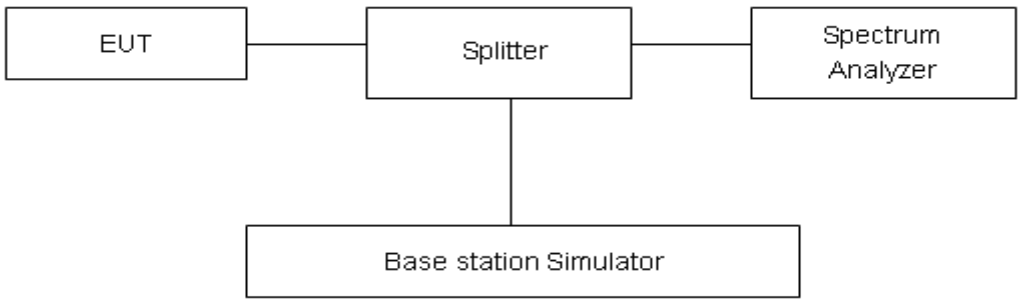
Temperature	Relative humidity
21°C ~25°C	40%~60%

Methods of Measurement

During the process of the testing, The EUT is controlled by the Spectrum analyzer to ensure max power transmission and proper modulation.

Since this procedure utilizes a conducted measurement it does not directly result in EIRP levels for comparison to the output power limits. In order to determine the EIRP level, the effective antenna gain must be added to the corrected (for external test set-up factors) measurement result.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

According to FCC §2.1046 & 90.1321(a) Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP). In any event, the peak EIRP power density shall not exceed 1 Watt in any one-megahertz slice of spectrum.

(c) Mobile and portable stations are limited to 1 watt/25 MHz EIRP. In any event, the peak EIRP density shall not exceed 40 milliwatts in any one-megahertz slice of spectrum.

Limit	Limit
Base Station/ Fixed Station	25 watts/25 MHz
Mobile and portable stations	1 watt/25 MHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.4 dB.

Test Result

LTE Band43					
Bandwidth	Modulation	Channel	RB Configuration	Conducted Power(dBm)	EIRP(dBm)
5M	QPSK	44115	1RB#0	22.08	25.26
5M	QPSK	44115	1RB#13	21.87	25.05
5M	QPSK	44115	1RB#24	22.13	25.31
5M	QPSK	44115	12RB#0	20.34	23.52
5M	QPSK	44115	12RB#6	20.28	23.46
5M	QPSK	44115	12RB#13	20.16	23.34
5M	QPSK	44115	25RB#0	20.19	23.37
5M	QPSK	44340	1RB#0	21.67	24.85
5M	QPSK	44340	1RB#13	21.36	24.54
5M	QPSK	44340	1RB#24	21.72	24.90
5M	QPSK	44340	12RB#0	19.91	23.09
5M	QPSK	44340	12RB#6	20.10	23.28
5M	QPSK	44340	12RB#13	20.23	23.41
5M	QPSK	44340	25RB#0	20.03	23.21
5M	QPSK	44565	1RB#0	21.49	24.67
5M	QPSK	44565	1RB#13	21.29	24.47
5M	QPSK	44565	1RB#24	21.40	24.58
5M	QPSK	44565	12RB#0	19.99	23.17
5M	QPSK	44565	12RB#6	19.96	23.14
5M	QPSK	44565	12RB#13	19.94	23.12
5M	QPSK	44565	25RB#0	19.89	23.07
5M	16QAM	44115	1RB#0	20.42	23.60
5M	16QAM	44115	1RB#13	20.28	23.46
5M	16QAM	44115	1RB#24	20.58	23.76
5M	16QAM	44115	12RB#0	18.63	21.81
5M	16QAM	44115	12RB#6	18.60	21.78
5M	16QAM	44115	12RB#13	18.67	21.85
5M	16QAM	44115	25RB#0	18.68	21.86
5M	16QAM	44340	1RB#0	20.56	23.74
5M	16QAM	44340	1RB#13	20.43	23.61
5M	16QAM	44340	1RB#24	20.90	24.08
5M	16QAM	44340	12RB#0	18.72	21.90
5M	16QAM	44340	12RB#6	18.74	21.92
5M	16QAM	44340	12RB#13	18.77	21.95
5M	16QAM	44340	25RB#0	18.75	21.93
5M	16QAM	44565	1RB#0	20.36	23.54

5M	16QAM	44565	1RB#13	20.11	23.29
5M	16QAM	44565	1RB#24	20.23	23.41
5M	16QAM	44565	12RB#0	18.98	22.16
5M	16QAM	44565	12RB#6	18.89	22.07
5M	16QAM	44565	12RB#13	18.73	21.91
5M	16QAM	44565	25RB#0	18.84	22.02
5M	64QAM	44190	1RB#0	20.25	23.43
5M	64QAM	44190	1RB#50	20.13	23.31
5M	64QAM	44190	1RB#99	20.47	23.65
5M	64QAM	44190	50RB#0	18.50	21.68
5M	64QAM	44190	50RB#25	18.44	21.62
5M	64QAM	44190	50RB#50	18.54	21.72
5M	64QAM	44190	100RB#0	18.52	21.70
5M	64QAM	44340	1RB#0	20.52	23.70
5M	64QAM	44340	1RB#50	20.26	23.44
5M	64QAM	44340	1RB#99	20.74	23.92
5M	64QAM	44340	50RB#0	18.60	21.78
5M	64QAM	44340	50RB#25	18.59	21.77
5M	64QAM	44340	50RB#50	18.68	21.86
5M	64QAM	44340	100RB#0	18.67	21.85
5M	64QAM	44490	1RB#0	20.19	23.37
5M	64QAM	44490	1RB#50	19.96	23.14
5M	64QAM	44490	1RB#99	20.15	23.33
5M	64QAM	44490	50RB#0	18.85	22.03
5M	64QAM	44490	50RB#25	18.72	21.90
5M	64QAM	44490	50RB#50	18.54	21.72
5M	64QAM	44490	100RB#0	18.67	21.85
10M	QPSK	44140	1RB#0	22.03	25.21
10M	QPSK	44140	1RB#25	21.81	24.99
10M	QPSK	44140	1RB#49	22.06	25.24
10M	QPSK	44140	25RB#0	20.27	23.45
10M	QPSK	44140	25RB#13	20.24	23.42
10M	QPSK	44140	25RB#25	20.09	23.27
10M	QPSK	44140	50RB#0	20.17	23.35
10M	QPSK	44340	1RB#0	21.54	24.72
10M	QPSK	44340	1RB#25	21.32	24.50
10M	QPSK	44340	1RB#49	21.64	24.82
10M	QPSK	44340	25RB#0	19.87	23.05
10M	QPSK	44340	25RB#13	20.06	23.24
10M	QPSK	44340	25RB#25	20.15	23.33
10M	QPSK	44340	50RB#0	19.95	23.13
10M	QPSK	44540	1RB#0	21.43	24.61
10M	QPSK	44540	1RB#25	21.23	24.41

10M	QPSK	44540	1RB#49	21.30	24.48
10M	QPSK	44540	25RB#0	19.93	23.11
10M	QPSK	44540	25RB#13	19.91	23.09
10M	QPSK	44540	25RB#25	19.95	23.13
10M	QPSK	44540	50RB#0	19.90	23.08
10M	16QAM	44140	1RB#0	20.39	23.57
10M	16QAM	44140	1RB#25	20.26	23.44
10M	16QAM	44140	1RB#49	20.56	23.74
10M	16QAM	44140	25RB#0	18.60	21.78
10M	16QAM	44140	25RB#13	18.57	21.75
10M	16QAM	44140	25RB#25	18.62	21.80
10M	16QAM	44140	50RB#0	18.66	21.84
10M	16QAM	44340	1RB#0	20.53	23.71
10M	16QAM	44340	1RB#25	20.38	23.56
10M	16QAM	44340	1RB#49	20.83	24.01
10M	16QAM	44340	25RB#0	18.69	21.87
10M	16QAM	44340	25RB#13	18.69	21.87
10M	16QAM	44340	25RB#25	18.77	21.95
10M	16QAM	44340	50RB#0	18.75	21.93
10M	16QAM	44540	1RB#0	20.31	23.49
10M	16QAM	44540	1RB#25	20.07	23.25
10M	16QAM	44540	1RB#49	20.19	23.37
10M	16QAM	44540	25RB#0	18.94	22.12
10M	16QAM	44540	25RB#13	18.83	22.01
10M	16QAM	44540	25RB#25	18.70	21.88
10M	16QAM	44540	50RB#0	18.82	22.00
10M	64QAM	44190	1RB#0	20.20	23.38
10M	64QAM	44190	1RB#50	20.07	23.25
10M	64QAM	44190	1RB#99	20.40	23.58
10M	64QAM	44190	50RB#0	18.43	21.61
10M	64QAM	44190	50RB#25	18.40	21.58
10M	64QAM	44190	50RB#50	18.47	21.65
10M	64QAM	44190	100RB#0	18.50	21.68
10M	64QAM	44340	1RB#0	20.39	23.57
10M	64QAM	44340	1RB#50	20.22	23.40
10M	64QAM	44340	1RB#99	20.66	23.84
10M	64QAM	44340	50RB#0	18.56	21.74
10M	64QAM	44340	50RB#25	18.55	21.73
10M	64QAM	44340	50RB#50	18.60	21.78
10M	64QAM	44340	100RB#0	18.59	21.77
10M	64QAM	44490	1RB#0	20.13	23.31
10M	64QAM	44490	1RB#50	19.90	23.08
10M	64QAM	44490	1RB#99	20.05	23.23

10M	64QAM	44490	50RB#0	18.79	21.97
10M	64QAM	44490	50RB#25	18.67	21.85
10M	64QAM	44490	50RB#50	18.55	21.73
10M	64QAM	44490	100RB#0	18.68	21.86
15M	QPSK	44165	1RB#0	22.02	25.20
15M	QPSK	44165	1RB#38	21.79	24.97
15M	QPSK	44165	1RB#74	22.03	25.21
15M	QPSK	44165	36RB#0	20.25	23.43
15M	QPSK	44165	36RB#18	20.21	23.39
15M	QPSK	44165	36RB#39	20.06	23.24
15M	QPSK	44165	75RB#0	20.15	23.33
15M	QPSK	44340	1RB#0	21.50	24.68
15M	QPSK	44340	1RB#38	21.31	24.49
15M	QPSK	44340	1RB#74	21.59	24.77
15M	QPSK	44340	36RB#0	19.83	23.01
15M	QPSK	44340	36RB#18	20.01	23.19
15M	QPSK	44340	36RB#39	20.12	23.30
15M	QPSK	44340	75RB#0	19.91	23.09
15M	QPSK	44515	1RB#0	21.41	24.59
15M	QPSK	44515	1RB#38	21.20	24.38
15M	QPSK	44515	1RB#74	21.26	24.44
15M	QPSK	44515	36RB#0	19.90	23.08
15M	QPSK	44515	36RB#18	19.87	23.05
15M	QPSK	44515	36RB#39	19.91	23.09
15M	QPSK	44515	75RB#0	19.85	23.03
15M	16QAM	44165	1RB#0	20.34	23.52
15M	16QAM	44165	1RB#38	20.24	23.42
15M	16QAM	44165	1RB#74	20.53	23.71
15M	16QAM	44165	36RB#0	18.57	21.75
15M	16QAM	44165	36RB#18	18.54	21.72
15M	16QAM	44165	36RB#39	18.60	21.78
15M	16QAM	44165	75RB#0	18.63	21.81
15M	16QAM	44340	1RB#0	20.51	23.69
15M	16QAM	44340	1RB#38	20.35	23.53
15M	16QAM	44340	1RB#74	20.79	23.97
15M	16QAM	44340	36RB#0	18.67	21.85
15M	16QAM	44340	36RB#18	18.64	21.82
15M	16QAM	44340	36RB#39	18.73	21.91
15M	16QAM	44340	75RB#0	18.70	21.88
15M	16QAM	44515	1RB#0	20.29	23.47
15M	16QAM	44515	1RB#38	20.05	23.23
15M	16QAM	44515	1RB#74	20.16	23.34
15M	16QAM	44515	36RB#0	18.91	22.09

15M	16QAM	44515	36RB#18	18.79	21.97
15M	16QAM	44515	36RB#39	18.67	21.85
15M	16QAM	44515	75RB#0	18.78	21.96
15M	64QAM	44190	1RB#0	20.19	23.37
15M	64QAM	44190	1RB#50	20.05	23.23
15M	64QAM	44190	1RB#99	20.37	23.55
15M	64QAM	44190	50RB#0	18.41	21.59
15M	64QAM	44190	50RB#25	18.37	21.55
15M	64QAM	44190	50RB#50	18.44	21.62
15M	64QAM	44190	100RB#0	18.48	21.66
15M	64QAM	44340	1RB#0	20.35	23.53
15M	64QAM	44340	1RB#50	20.21	23.39
15M	64QAM	44340	1RB#99	20.61	23.79
15M	64QAM	44340	50RB#0	18.52	21.70
15M	64QAM	44340	50RB#25	18.50	21.68
15M	64QAM	44340	50RB#50	18.57	21.75
15M	64QAM	44340	100RB#0	18.55	21.73
15M	64QAM	44490	1RB#0	20.11	23.29
15M	64QAM	44490	1RB#50	19.87	23.05
15M	64QAM	44490	1RB#99	20.01	23.19
15M	64QAM	44490	50RB#0	18.76	21.94
15M	64QAM	44490	50RB#25	18.63	21.81
15M	64QAM	44490	50RB#50	18.51	21.69
15M	64QAM	44490	100RB#0	18.63	21.81
20M	QPSK	44190	1RB#0	21.99	25.17
20M	QPSK	44190	1RB#50	21.78	24.96
20M	QPSK	44190	1RB#99	22.01	25.19
20M	QPSK	44190	50RB#0	20.22	23.40
20M	QPSK	44190	50RB#25	20.19	23.37
20M	QPSK	44190	50RB#50	20.03	23.21
20M	QPSK	44190	100RB#0	20.12	23.30
20M	QPSK	44340	1RB#0	21.46	24.64
20M	QPSK	44340	1RB#50	21.27	24.45
20M	QPSK	44340	1RB#99	21.58	24.76
20M	QPSK	44340	50RB#0	19.78	22.96
20M	QPSK	44340	50RB#25	19.97	23.15
20M	QPSK	44340	50RB#50	20.07	23.25
20M	QPSK	44340	100RB#0	19.86	23.04
20M	QPSK	44490	1RB#0	21.38	24.56
20M	QPSK	44490	1RB#50	21.18	24.36
20M	QPSK	44490	1RB#99	21.23	24.41
20M	QPSK	44490	50RB#0	19.86	23.04
20M	QPSK	44490	50RB#25	19.84	23.02

20M	QPSK	44490	50RB#50	19.87	23.05
20M	QPSK	44490	100RB#0	19.81	22.99
20M	16QAM	44190	1RB#0	20.32	23.50
20M	16QAM	44190	1RB#50	20.20	23.38
20M	16QAM	44190	1RB#99	20.51	23.69
20M	16QAM	44190	50RB#0	18.54	21.72
20M	16QAM	44190	50RB#25	18.51	21.69
20M	16QAM	44190	50RB#50	18.57	21.75
20M	16QAM	44190	100RB#0	18.61	21.79
20M	16QAM	44340	1RB#0	20.47	23.65
20M	16QAM	44340	1RB#50	20.33	23.51
20M	16QAM	44340	1RB#99	20.76	23.94
20M	16QAM	44340	50RB#0	18.63	21.81
20M	16QAM	44340	50RB#25	18.62	21.80
20M	16QAM	44340	50RB#50	18.68	21.86
20M	16QAM	44340	100RB#0	18.66	21.84
20M	16QAM	44490	1RB#0	20.24	23.42
20M	16QAM	44490	1RB#50	20.01	23.19
20M	16QAM	44490	1RB#99	20.14	23.32
20M	16QAM	44490	50RB#0	18.88	22.06
20M	16QAM	44490	50RB#25	18.76	21.94
20M	16QAM	44490	50RB#50	18.63	21.81
20M	16QAM	44490	100RB#0	18.75	21.93
20M	64QAM	44190	1RB#0	20.16	23.34
20M	64QAM	44190	1RB#50	20.04	23.22
20M	64QAM	44190	1RB#99	20.35	23.53
20M	64QAM	44190	50RB#0	18.38	21.56
20M	64QAM	44190	50RB#25	18.35	21.53
20M	64QAM	44190	50RB#50	18.41	21.59
20M	64QAM	44190	100RB#0	18.45	21.63
20M	64QAM	44340	1RB#0	20.31	23.49
20M	64QAM	44340	1RB#50	20.17	23.35
20M	64QAM	44340	1RB#99	20.60	23.78
20M	64QAM	44340	50RB#0	18.47	21.65
20M	64QAM	44340	50RB#25	18.46	21.64
20M	64QAM	44340	50RB#50	18.52	21.70
20M	64QAM	44340	100RB#0	18.50	21.68
20M	64QAM	44490	1RB#0	20.08	23.26
20M	64QAM	44490	1RB#50	19.85	23.03
20M	64QAM	44490	1RB#99	19.98	23.16
20M	64QAM	44490	50RB#0	18.72	21.90
20M	64QAM	44490	50RB#25	18.60	21.78
20M	64QAM	44490	50RB#50	18.47	21.65

20M	64QAM	44490	100RB#0	18.59	21.77

LTE Band48					
Bandwidth	**Modulation**	**Channel**	**RB Configuration**	**Conducted Power(dBm)**	**EIRP(dBm)**
5M	QPSK	56265	1RB#0	22.99	26.17
5M	QPSK	56265	1RB#13	22.47	25.65
5M	QPSK	56265	1RB#24	22.65	25.83
5M	QPSK	56265	12RB#0	20.56	23.74
5M	QPSK	56265	12RB#6	20.63	23.81
5M	QPSK	56265	12RB#13	20.84	24.02
5M	QPSK	56265	25RB#0	20.54	23.72
5M	QPSK	56490	1RB#0	22.02	25.20
5M	QPSK	56490	1RB#13	21.68	24.86
5M	QPSK	56490	1RB#24	21.97	25.15
5M	QPSK	56490	12RB#0	20.37	23.55
5M	QPSK	56490	12RB#6	20.29	23.47
5M	QPSK	56490	12RB#13	20.29	23.47
5M	QPSK	56490	25RB#0	20.18	23.36
5M	QPSK	56715	1RB#0	21.86	25.04
5M	QPSK	56715	1RB#13	21.47	24.65
5M	QPSK	56715	1RB#24	21.47	24.65
5M	QPSK	56715	12RB#0	20.07	23.25
5M	QPSK	56715	12RB#6	20.09	23.27
5M	QPSK	56715	12RB#13	20.02	23.20
5M	QPSK	56715	25RB#0	19.85	23.03
5M	16QAM	56265	1RB#0	20.46	23.64
5M	16QAM	56265	1RB#13	20.31	23.49
5M	16QAM	56265	1RB#24	20.62	23.80
5M	16QAM	56265	12RB#0	18.41	21.59
5M	16QAM	56265	12RB#6	18.62	21.80
5M	16QAM	56265	12RB#13	18.78	21.96
5M	16QAM	56265	25RB#0	18.48	21.66
5M	16QAM	56490	1RB#0	20.22	23.40
5M	16QAM	56490	1RB#13	20.04	23.22
5M	16QAM	56490	1RB#24	20.37	23.55
5M	16QAM	56490	12RB#0	18.72	21.90
5M	16QAM	56490	12RB#6	18.76	21.94
5M	16QAM	56490	12RB#13	18.78	21.96
5M	16QAM	56490	25RB#0	18.77	21.95

5M	16QAM	56715	1RB#0	20.72	23.90
5M	16QAM	56715	1RB#13	20.32	23.50
5M	16QAM	56715	1RB#24	20.29	23.47
5M	16QAM	56715	12RB#0	18.79	21.97
5M	16QAM	56715	12RB#6	18.87	22.05
5M	16QAM	56715	12RB#13	18.82	22.00
5M	16QAM	56715	25RB#0	18.66	21.84
5M	64QAM	56340	1RB#0	20.34	23.52
5M	64QAM	56340	1RB#50	20.21	23.39
5M	64QAM	56340	1RB#99	20.56	23.74
5M	64QAM	56340	50RB#0	18.33	21.51
5M	64QAM	56340	50RB#25	18.51	21.69
5M	64QAM	56340	50RB#50	18.70	21.88
5M	64QAM	56340	100RB#0	18.37	21.55
5M	64QAM	56490	1RB#0	20.23	23.41
5M	64QAM	56490	1RB#50	19.92	23.10
5M	64QAM	56490	1RB#99	20.26	23.44
5M	64QAM	56490	50RB#0	18.65	21.83
5M	64QAM	56490	50RB#25	18.66	21.84
5M	64QAM	56490	50RB#50	18.74	21.92
5M	64QAM	56490	100RB#0	18.74	21.92
5M	64QAM	56640	1RB#0	20.60	23.78
5M	64QAM	56640	1RB#50	20.22	23.40
5M	64QAM	56640	1RB#99	20.26	23.44
5M	64QAM	56640	50RB#0	18.71	21.89
5M	64QAM	56640	50RB#25	18.75	21.93
5M	64QAM	56640	50RB#50	18.68	21.86
5M	64QAM	56640	100RB#0	18.54	21.72
10M	QPSK	56290	1RB#0	22.94	26.12
10M	QPSK	56290	1RB#25	22.41	25.59
10M	QPSK	56290	1RB#49	22.58	25.76
10M	QPSK	56290	25RB#0	20.49	23.67
10M	QPSK	56290	25RB#13	20.59	23.77
10M	QPSK	56290	25RB#25	20.77	23.95
10M	QPSK	56290	50RB#0	20.52	23.70
10M	QPSK	56490	1RB#0	21.89	25.07
10M	QPSK	56490	1RB#25	21.64	24.82
10M	QPSK	56490	1RB#49	21.89	25.07
10M	QPSK	56490	25RB#0	20.33	23.51
10M	QPSK	56490	25RB#13	20.25	23.43
10M	QPSK	56490	25RB#25	20.21	23.39
10M	QPSK	56490	50RB#0	20.10	23.28
10M	QPSK	56690	1RB#0	21.80	24.98

10M	QPSK	56690	1RB#25	21.41	24.59
10M	QPSK	56690	1RB#49	21.37	24.55
10M	QPSK	56690	25RB#0	20.01	23.19
10M	QPSK	56690	25RB#13	20.04	23.22
10M	QPSK	56690	25RB#25	20.03	23.21
10M	QPSK	56690	50RB#0	19.86	23.04
10M	16QAM	56290	1RB#0	20.43	23.61
10M	16QAM	56290	1RB#25	20.29	23.47
10M	16QAM	56290	1RB#49	20.60	23.78
10M	16QAM	56290	25RB#0	18.38	21.56
10M	16QAM	56290	25RB#13	18.59	21.77
10M	16QAM	56290	25RB#25	18.73	21.91
10M	16QAM	56290	50RB#0	18.46	21.64
10M	16QAM	56490	1RB#0	20.19	23.37
10M	16QAM	56490	1RB#25	19.99	23.17
10M	16QAM	56490	1RB#49	20.30	23.48
10M	16QAM	56490	25RB#0	18.69	21.87
10M	16QAM	56490	25RB#13	18.71	21.89
10M	16QAM	56490	25RB#25	18.78	21.96
10M	16QAM	56490	50RB#0	18.77	21.95
10M	16QAM	56690	1RB#0	20.67	23.85
10M	16QAM	56690	1RB#25	20.28	23.46
10M	16QAM	56690	1RB#49	20.25	23.43
10M	16QAM	56690	25RB#0	18.75	21.93
10M	16QAM	56690	25RB#13	18.81	21.99
10M	16QAM	56690	25RB#25	18.79	21.97
10M	16QAM	56690	50RB#0	18.64	21.82
10M	64QAM	56340	1RB#0	20.29	23.47
10M	64QAM	56340	1RB#50	20.15	23.33
10M	64QAM	56340	1RB#99	20.49	23.67
10M	64QAM	56340	50RB#0	18.26	21.44
10M	64QAM	56340	50RB#25	18.47	21.65
10M	64QAM	56340	50RB#50	18.63	21.81
10M	64QAM	56340	100RB#0	18.35	21.53
10M	64QAM	56490	1RB#0	20.10	23.28
10M	64QAM	56490	1RB#50	19.88	23.06
10M	64QAM	56490	1RB#99	20.18	23.36
10M	64QAM	56490	50RB#0	18.61	21.79
10M	64QAM	56490	50RB#25	18.62	21.80
10M	64QAM	56490	50RB#50	18.66	21.84
10M	64QAM	56490	100RB#0	18.66	21.84
10M	64QAM	56640	1RB#0	20.54	23.72
10M	64QAM	56640	1RB#50	20.16	23.34

10M	64QAM	56640	1RB#99	20.16	23.34
10M	64QAM	56640	50RB#0	18.65	21.83
10M	64QAM	56640	50RB#25	18.70	21.88
10M	64QAM	56640	50RB#50	18.69	21.87
10M	64QAM	56640	100RB#0	18.55	21.73
15M	QPSK	56315	1RB#0	22.93	26.11
15M	QPSK	56315	1RB#38	22.39	25.57
15M	QPSK	56315	1RB#74	22.55	25.73
15M	QPSK	56315	36RB#0	20.47	23.65
15M	QPSK	56315	36RB#18	20.56	23.74
15M	QPSK	56315	36RB#39	20.74	23.92
15M	QPSK	56315	75RB#0	20.50	23.68
15M	QPSK	56490	1RB#0	21.85	25.03
15M	QPSK	56490	1RB#38	21.63	24.81
15M	QPSK	56490	1RB#74	21.84	25.02
15M	QPSK	56490	36RB#0	20.29	23.47
15M	QPSK	56490	36RB#18	20.20	23.38
15M	QPSK	56490	36RB#39	20.18	23.36
15M	QPSK	56490	75RB#0	20.06	23.24
15M	QPSK	56665	1RB#0	21.78	24.96
15M	QPSK	56665	1RB#38	21.38	24.56
15M	QPSK	56665	1RB#74	21.33	24.51
15M	QPSK	56665	36RB#0	19.98	23.16
15M	QPSK	56665	36RB#18	20.00	23.18
15M	QPSK	56665	36RB#39	19.99	23.17
15M	QPSK	56665	75RB#0	19.81	22.99
15M	16QAM	56315	1RB#0	20.38	23.56
15M	16QAM	56315	1RB#38	20.27	23.45
15M	16QAM	56315	1RB#74	20.57	23.75
15M	16QAM	56315	36RB#0	18.35	21.53
15M	16QAM	56315	36RB#18	18.56	21.74
15M	16QAM	56315	36RB#39	18.71	21.89
15M	16QAM	56315	75RB#0	18.43	21.61
15M	16QAM	56490	1RB#0	20.17	23.35
15M	16QAM	56490	1RB#38	19.96	23.14
15M	16QAM	56490	1RB#74	20.26	23.44
15M	16QAM	56490	36RB#0	18.67	21.85
15M	16QAM	56490	36RB#18	18.66	21.84
15M	16QAM	56490	36RB#39	18.74	21.92
15M	16QAM	56490	75RB#0	18.72	21.90
15M	16QAM	56665	1RB#0	20.65	23.83
15M	16QAM	56665	1RB#38	20.26	23.44
15M	16QAM	56665	1RB#74	20.22	23.40

15M	16QAM	56665	36RB#0	18.72	21.90
15M	16QAM	56665	36RB#18	18.77	21.95
15M	16QAM	56665	36RB#39	18.76	21.94
15M	16QAM	56665	75RB#0	18.60	21.78
15M	64QAM	56340	1RB#0	20.28	23.46
15M	64QAM	56340	1RB#50	20.13	23.31
15M	64QAM	56340	1RB#99	20.46	23.64
15M	64QAM	56340	50RB#0	18.24	21.42
15M	64QAM	56340	50RB#25	18.44	21.62
15M	64QAM	56340	50RB#50	18.60	21.78
15M	64QAM	56340	100RB#0	18.33	21.51
15M	64QAM	56490	1RB#0	20.06	23.24
15M	64QAM	56490	1RB#50	19.87	23.05
15M	64QAM	56490	1RB#99	20.13	23.31
15M	64QAM	56490	50RB#0	18.57	21.75
15M	64QAM	56490	50RB#25	18.57	21.75
15M	64QAM	56490	50RB#50	18.63	21.81
15M	64QAM	56490	100RB#0	18.62	21.80
15M	64QAM	56640	1RB#0	20.52	23.70
15M	64QAM	56640	1RB#50	20.13	23.31
15M	64QAM	56640	1RB#99	20.12	23.30
15M	64QAM	56640	50RB#0	18.62	21.80
15M	64QAM	56640	50RB#25	18.66	21.84
15M	64QAM	56640	50RB#50	18.65	21.83
15M	64QAM	56640	100RB#0	18.50	21.68
20M	QPSK	56340	1RB#0	22.90	26.08
20M	QPSK	56340	1RB#50	22.38	25.56
20M	QPSK	56340	1RB#99	22.53	25.71
20M	QPSK	56340	50RB#0	20.44	23.62
20M	QPSK	56340	50RB#25	20.54	23.72
20M	QPSK	56340	50RB#50	20.71	23.89
20M	QPSK	56340	100RB#0	20.47	23.65
20M	QPSK	56490	1RB#0	21.81	24.99
20M	QPSK	56490	1RB#50	21.59	24.77
20M	QPSK	56490	1RB#99	21.83	25.01
20M	QPSK	56490	50RB#0	20.24	23.42
20M	QPSK	56490	50RB#25	20.16	23.34
20M	QPSK	56490	50RB#50	20.13	23.31
20M	QPSK	56490	100RB#0	20.01	23.19
20M	QPSK	56640	1RB#0	21.75	24.93
20M	QPSK	56640	1RB#50	21.36	24.54
20M	QPSK	56640	1RB#99	21.30	24.48
20M	QPSK	56640	50RB#0	19.94	23.12

20M	QPSK	56640	50RB#25	19.97	23.15
20M	QPSK	56640	50RB#50	19.95	23.13
20M	QPSK	56640	100RB#0	19.77	22.95
20M	16QAM	56340	1RB#0	20.36	23.54
20M	16QAM	56340	1RB#50	20.23	23.41
20M	16QAM	56340	1RB#99	20.55	23.73
20M	16QAM	56340	50RB#0	18.32	21.50
20M	16QAM	56340	50RB#25	18.53	21.71
20M	16QAM	56340	50RB#50	18.68	21.86
20M	16QAM	56340	100RB#0	18.41	21.59
20M	16QAM	56490	1RB#0	20.13	23.31
20M	16QAM	56490	1RB#50	19.94	23.12
20M	16QAM	56490	1RB#99	20.23	23.41
20M	16QAM	56490	50RB#0	18.63	21.81
20M	16QAM	56490	50RB#25	18.64	21.82
20M	16QAM	56490	50RB#50	18.69	21.87
20M	16QAM	56490	100RB#0	18.68	21.86
20M	16QAM	56640	1RB#0	20.60	23.78
20M	16QAM	56640	1RB#50	20.22	23.40
20M	16QAM	56640	1RB#99	20.20	23.38
20M	16QAM	56640	50RB#0	18.69	21.87
20M	16QAM	56640	50RB#25	18.74	21.92
20M	16QAM	56640	50RB#50	18.72	21.90
20M	16QAM	56640	100RB#0	18.57	21.75
20M	64QAM	56340	1RB#0	20.25	23.43
20M	64QAM	56340	1RB#50	20.12	23.30
20M	64QAM	56340	1RB#99	20.44	23.62
20M	64QAM	56340	50RB#0	18.21	21.39
20M	64QAM	56340	50RB#25	18.42	21.60
20M	64QAM	56340	50RB#50	18.57	21.75
20M	64QAM	56340	100RB#0	18.30	21.48
20M	64QAM	56490	1RB#0	20.02	23.20
20M	64QAM	56490	1RB#50	19.83	23.01
20M	64QAM	56490	1RB#99	20.12	23.30
20M	64QAM	56490	50RB#0	18.52	21.70
20M	64QAM	56490	50RB#25	18.53	21.71
20M	64QAM	56490	50RB#50	18.58	21.76
20M	64QAM	56490	100RB#0	18.57	21.75
20M	64QAM	56640	1RB#0	20.49	23.67
20M	64QAM	56640	1RB#50	20.11	23.29
20M	64QAM	56640	1RB#99	20.09	23.27
20M	64QAM	56640	50RB#0	18.58	21.76
20M	64QAM	56640	50RB#25	18.63	21.81

20M	64QAM	56640	50RB#50	18.61	21.79
20M	64QAM	56640	100RB#0	18.46	21.64

5.4. Occupied Bandwidth

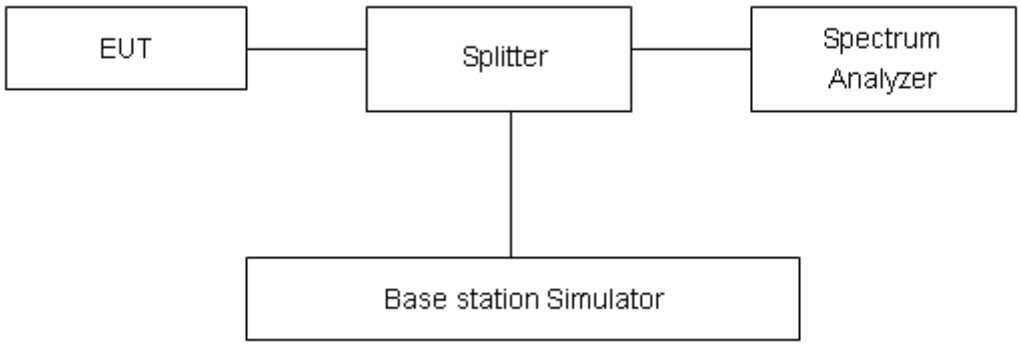
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 43/48 (5MHz),
RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 43/48 (10MHz/15MHz/20MHz).
99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2,U=624Hz.

Test Result

LTE Band43						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	44115	3652.5	4.5297	5.311
			44340	3675.0	4.5282	5.354
			44565	3697.5	4.5127	5.124
		10	44140	3655.0	9.0623	10.990
			44340	3675.0	9.0251	9.876
			44540	3695.0	9.0544	10.060
		15	44165	3657.5	13.5070	14.500
			44340	3675.0	13.4510	14.380
			44515	3692.5	13.4770	14.410
		20	44190	3660.0	17.9360	18.800
			44340	3675.0	17.8730	18.910
			44490	3690.0	17.9000	19.120
	16QAM	5	44115	3652.5	4.5351	5.233
			44340	3675.0	4.5027	5.175
			44565	3697.5	4.5165	5.172
		10	44140	3655.0	9.0576	9.869
			44340	3675.0	9.0062	9.974
			44540	3695.0	9.0607	9.941
		15	44165	3657.5	13.4540	14.530
			44340	3675.0	13.5230	14.600
			44515	3692.5	13.4740	14.380
		20	44190	3660.0	17.8290	18.790
			44340	3675.0	17.9050	18.750
			44490	3690.0	17.8940	19.010
	64QAM	5	44115	3652.5	4.5338	5.232
			44340	3675.0	4.5408	5.203
			44565	3697.5	4.5317	5.156
		10	44140	3655.0	9.0562	10.380
			44340	3675.0	9.0551	10.230
			44540	3695.0	9.0823	10.480
		15	44165	3657.5	13.4300	14.640
			44340	3675.0	13.4690	14.710
			44515	3692.5	13.4820	14.580
		20	44190	3660.0	17.9030	19.130
			44340	3675.0	17.8840	18.900
			44490	3690.0	17.8590	19.180

LTE Band48						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	56265	3652.5	4.5585	5.288
			56490	3675.0	4.5359	5.177
			56715	3697.5	4.5340	5.360
		10	56290	3655.0	9.0858	10.550
			56490	3675.0	9.0420	10.130
			56690	3695.0	9.0831	10.610
		15	56315	3657.5	13.4720	14.690
			56490	3675.0	13.4860	14.620
			56665	3692.5	13.4620	14.680
		20	56340	3660.0	17.9010	19.000
			56490	3675.0	17.9060	18.850
			56640	3690.0	17.9160	18.860
	16QAM	5	56265	3652.5	4.5164	5.211
			56490	3675.0	4.5160	5.136
			56715	3697.5	4.5154	5.161
		10	56290	3655.0	9.0346	10.070
			56490	3675.0	9.0218	10.110
			56690	3695.0	9.0457	10.060
		15	56315	3657.5	13.4580	14.590
			56490	3675.0	13.5100	14.740
			56665	3692.5	13.5220	14.440
		20	56340	3660.0	17.8920	19.130
			56490	3675.0	19.8920	18.790
			56640	3690.0	17.8880	18.850
	64QAM	5	56265	3652.5	4.5349	5.165
			56490	3675.0	4.5247	5.213
			56715	3697.5	4.5329	5.204
		10	56290	3655.0	9.0400	10.520
			56490	3675.0	9.0558	10.330
			56690	3695.0	9.0413	10.220
		15	56315	3657.5	13.4770	14.680
			56490	3675.0	13.4340	14.390
			56665	3692.5	13.4540	14.460
		20	56340	3660.0	17.9180	19.010
			56490	3675.0	17.8730	18.970
			56640	3690.0	17.8860	19.180

LTE Band 43 QPSK 5MHz CH-Low

LTE Band 43 QPSK 10MHz CH-Low

LTE Band 43 QPSK 5MHz CH-Middle

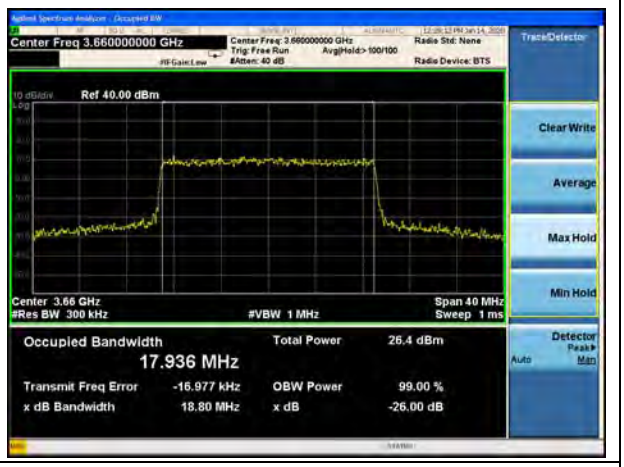
LTE Band 43 QPSK 10MHz CH-Middle

LTE Band 43 QPSK 5MHz CH-High

LTE Band 43 QPSK 10MHz CH-High

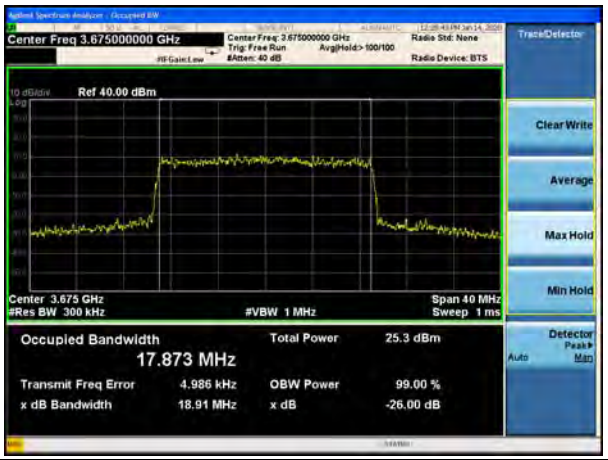
LTE Band 43 QPSK 15MHz CH-Low

LTE Band 43 QPSK 20MHz CH-Low



LTE Band 43 QPSK 15MHz CH-Middle

LTE Band 43 QPSK 20MHz CH-Middle



LTE Band 43 QPSK 15MHz CH-High

LTE Band 43 QPSK 20MHz CH-High

LTE Band 43 16QAM 5MHz CH-Low

LTE Band 43 16QAM 10MHz CH-Low

LTE Band 43 16QAM 5MHz CH-Middle

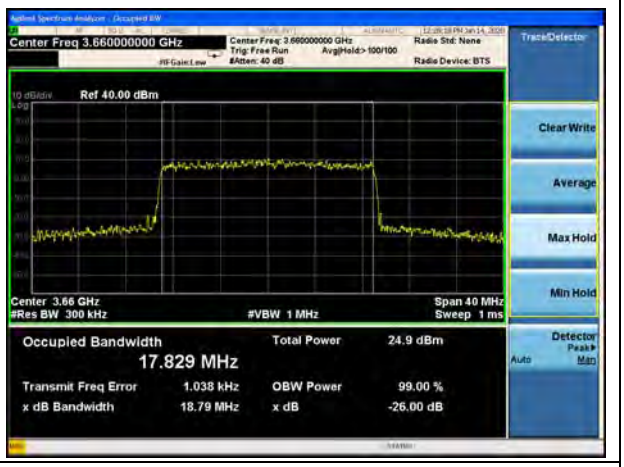
LTE Band 43 16QAM 10MHz CH-Middle

LTE Band 43 16QAM 5MHz CH-High

LTE Band 43 16QAM 10MHz CH-High

LTE Band 43 16QAM 15MHz CH-Low

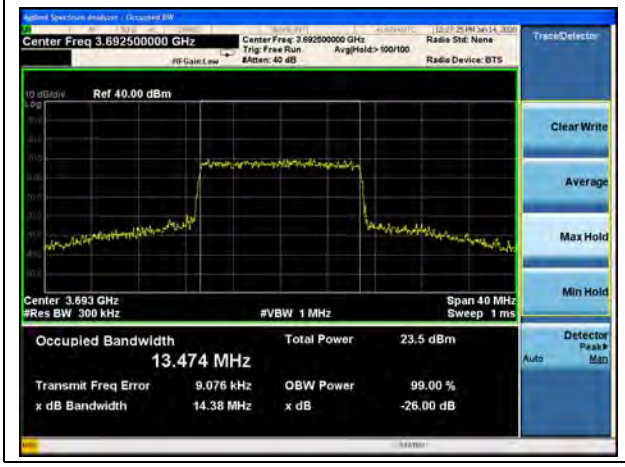
LTE Band 43 16QAM 20MHz CH-Low



LTE Band 43 16QAM 15MHz CH-Middle

LTE Band 43 16QAM 20MHz CH-Middle

LTE Band 43 16QAM 15MHz CH-High



LTE Band 43 16QAM 20MHz CH-High

LTE Band 43 64QAM 5MHz CH-Low

LTE Band 43 64QAM 10MHz CH-Low

LTE Band 43 64QAM 5MHz CH-Middle

LTE Band 43 64QAM 10MHz CH-Middle

LTE Band 43 64QAM 5MHz CH-High

LTE Band 43 64QAM 10MHz CH-High

LTE Band 43 64QAM 15MHz CH-Low

LTE Band 43 64QAM 20MHz CH-Low

LTE Band 43 64QAM 15MHz CH-Middle

LTE Band 43 64QAM 20MHz CH-Middle

LTE Band 43 64QAM 15MHz CH-High

LTE Band 43 64QAM 20MHz CH-High

LTE Band 48 QPSK 5MHz CH-Low

LTE Band 48 QPSK 10MHz CH-Low

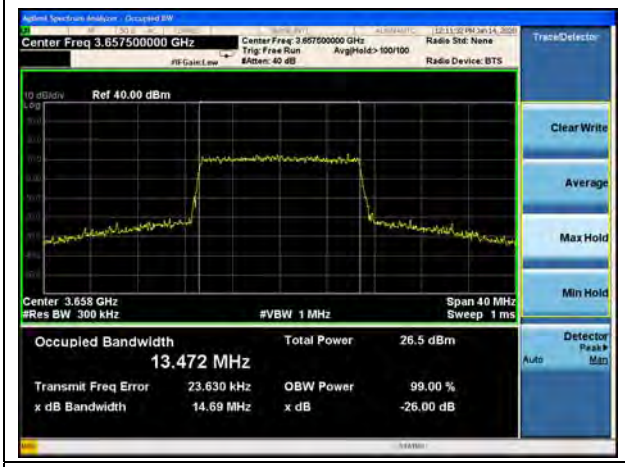
LTE Band 48 QPSK 5MHz CH-Middle

LTE Band 48 QPSK 10MHz CH-Middle

LTE Band 48 QPSK 5MHz CH-High

LTE Band 48 QPSK 10MHz CH-High

LTE Band 48 QPSK 15MHz CH-Low



LTE Band 48 QPSK 20MHz CH-Low

LTE Band 48 QPSK 15MHz CH-Middle

LTE Band 48 QPSK 20MHz CH-Middle

LTE Band 48 QPSK 15MHz CH-High

LTE Band 48 QPSK 20MHz CH-High

LTE Band 48 16QAM 5MHz CH-Low

LTE Band 48 16QAM 10MHz CH-Low

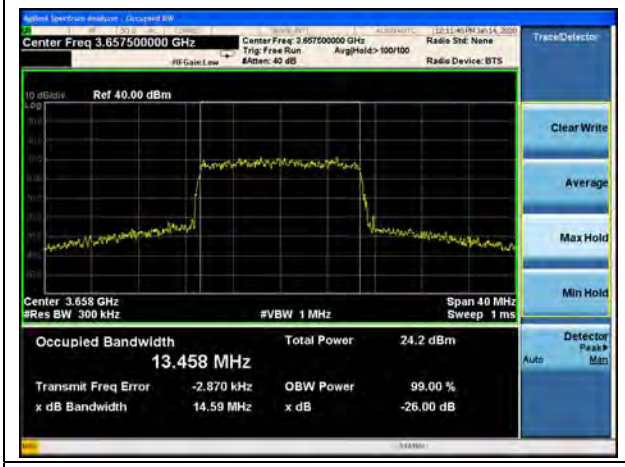
LTE Band 48 16QAM 5MHz CH-Middle

LTE Band 48 16QAM 10MHz CH-Middle

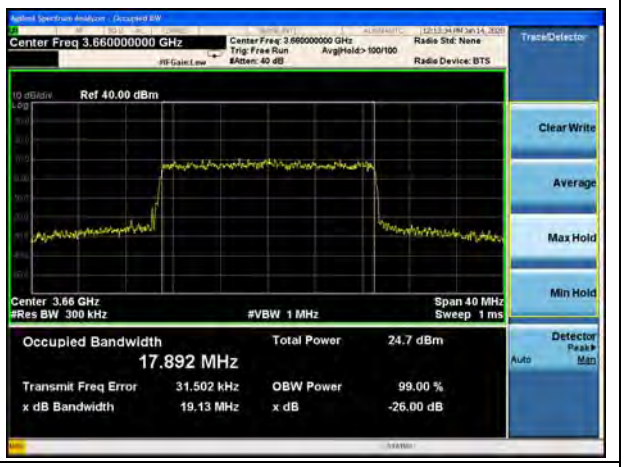
LTE Band 48 16QAM 5MHz CH-High

LTE Band 48 16QAM 10MHz CH-High

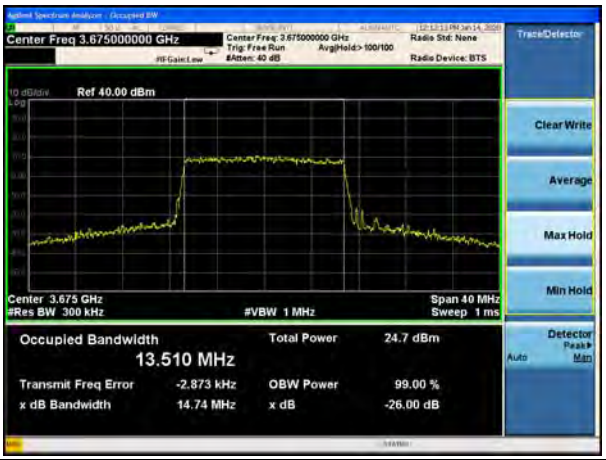
LTE Band 48 16QAM 15MHz CH-Low



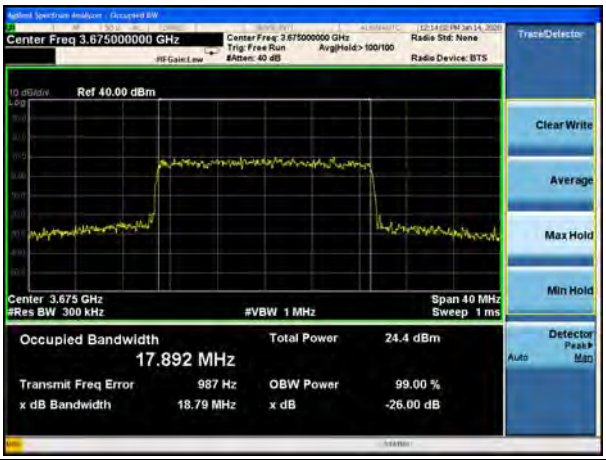
LTE Band 48 16QAM 20MHz CH-Low



LTE Band 48 16QAM 15MHz CH-Middle



LTE Band 48 16QAM 20MHz CH-Middle



LTE Band 48 16QAM 15MHz CH-High

LTE Band 48 16QAM 20MHz CH-High

LTE Band 48 64QAM 5MHz CH-Low

LTE Band 48 64QAM 10MHz CH-Low

LTE Band 48 64QAM 5MHz CH-Middle

LTE Band 48 64QAM 10MHz CH-Middle

LTE Band 48 64QAM 5MHz CH-High

LTE Band 48 64QAM 10MHz CH-High

LTE Band 48 64QAM 15MHz CH-Low

LTE Band 48 64QAM 20MHz CH-Low

LTE Band 48 64QAM 15MHz CH-Middle

LTE Band 48 64QAM 20MHz CH-Middle

LTE Band 48 64QAM 15MHz CH-High

LTE Band 48 64QAM 20MHz CH-High

5.5. Emission Mask

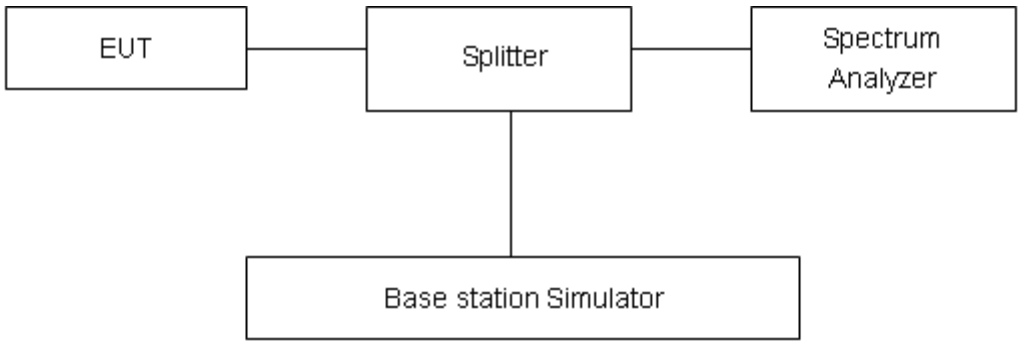
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The average detector is used.
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 43/48 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 43/48 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 43/48 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 43/48 (20MHz).
Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

Rule Part 90.210(b) For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:
(1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

Rule Part 90.1323(a) 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.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U=0.684dB.

Test Result:

All the test traces in the plots shows the test results clearly.

LTE Band 43 QPSK 5MHz CH-Low, 1RB	LTE Band 43 QPSK 5MHz CH-High, 1RB
	
LTE Band 43 QPSK 5MHz CH-Low, 100%RB	LTE Band 43 QPSK 5MHz CH-High, 100%RB
	
LTE Band 43 QPSK 10MHz CH-Low, 1RB	LTE Band 43 QPSK 10MHz CH-High, 1RB
	

LTE Band 43 QPSK 10MHz CH-Low, 100%RB

LTE Band 43 QPSK 10MHz CH-High, 100%RB

LTE Band 43 QPSK 15MHz CH-Low, 1RB

LTE Band 43 QPSK 15MHz CH-High, 1RB

LTE Band 43 QPSK 15MHz CH-Low, 100%RB

LTE Band 43 QPSK 15MHz CH-High, 100%RB

LTE Band 43 QPSK 20MHz CH-Low, 1RB

LTE Band 43 QPSK 20MHz CH-High, 1RB

LTE Band 43 QPSK 20MHz CH-Low, 100%RB

LTE Band 43 QPSK 20MHz CH-High, 100%RB

LTE Band 43 16QAM 5MHz CH-Low, 1RB

LTE Band 43 16QAM 5MHz CH-High, 1RB

LTE Band 43 16QAM 5MHz CH-Low, 100%RB

LTE Band 43 16QAM 5MHz CH-High, 100%RB

LTE Band 43 16QAM 10MHz CH-Low, 1RB

LTE Band 43 16QAM 10MHz CH-High, 1RB

LTE Band 43 16QAM 10MHz CH-Low, 100%RB

LTE Band 43 16QAM 10MHz CH-High, 100%RB

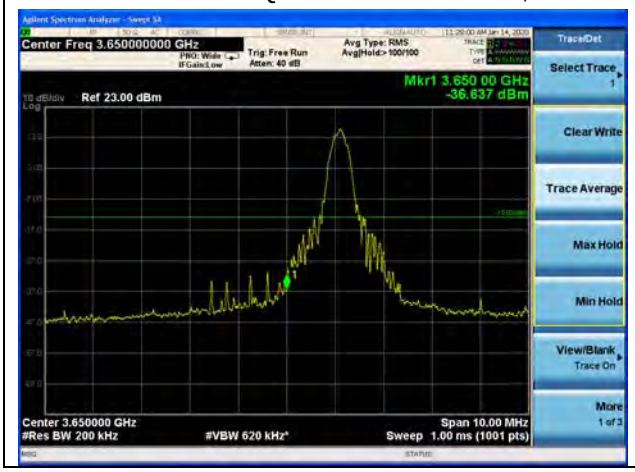
LTE Band 43 16QAM 15MHz CH-Low, 1RB

LTE Band 43 16QAM 15MHz CH-High, 1RB

LTE Band 43 16QAM 15MHz CH-Low, 100%RB

LTE Band 43 16QAM 15MHz CH-High, 100%RB

LTE Band 43 16QAM 20MHz CH-Low, 1RB



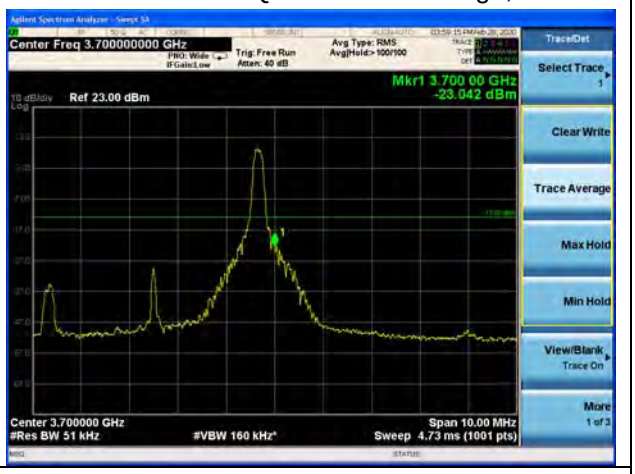
LTE Band 43 16QAM 20MHz CH-High, 1RB

LTE Band 43 16QAM 20MHz CH-Low, 100%RB

LTE Band 43 16QAM 20MHz CH-High, 100%RB

LTE Band 43 64QAM 5MHz CH-Low, 1RB

LTE Band 43 64QAM 5MHz CH-High, 1RB



LTE Band 43 64QAM 5MHz CH-Low, 100%RB

LTE Band 43 64QAM 5MHz CH-High, 100%RB

LTE Band 43 64QAM 10MHz CH-Low, 1RB

LTE Band 43 64QAM 10MHz CH-High, 1RB

LTE Band 43 64QAM 10MHz CH-Low, 100%RB

LTE Band 43 64QAM 10MHz CH-High, 100%RB

LTE Band 43 64QAM 15MHz CH-Low, 1RB

LTE Band 43 64QAM 15MHz CH-High, 1RB

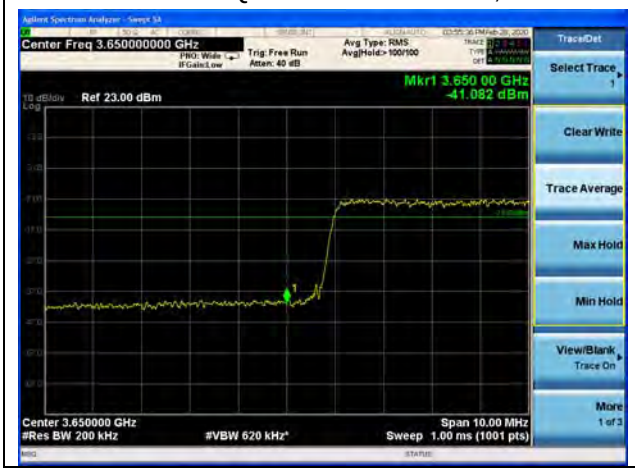
LTE Band 43 64QAM 15MHz CH-Low, 100%RB

LTE Band 43 64QAM 15MHz CH-High, 100%RB

LTE Band 43 64QAM 20MHz CH-Low, 1RB

LTE Band 43 64QAM 20MHz CH-High, 1RB

LTE Band 43 64QAM 20MHz CH-Low, 100%RB



LTE Band 43 64QAM 20MHz CH-High, 100%RB

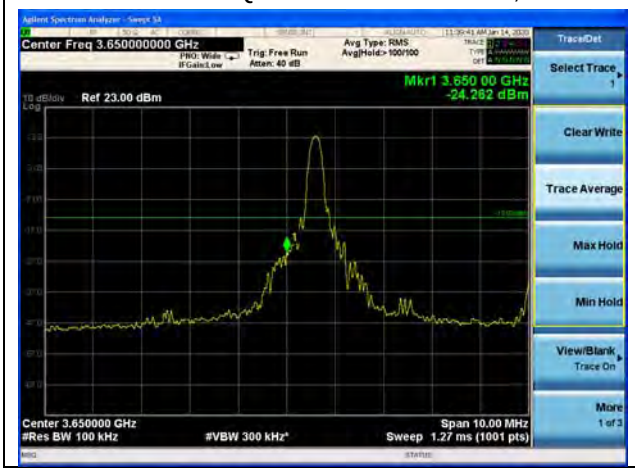
LTE Band 48 QPSK 5MHz CH-Low, 1RB

LTE Band 48 QPSK 5MHz CH-High, 1RB

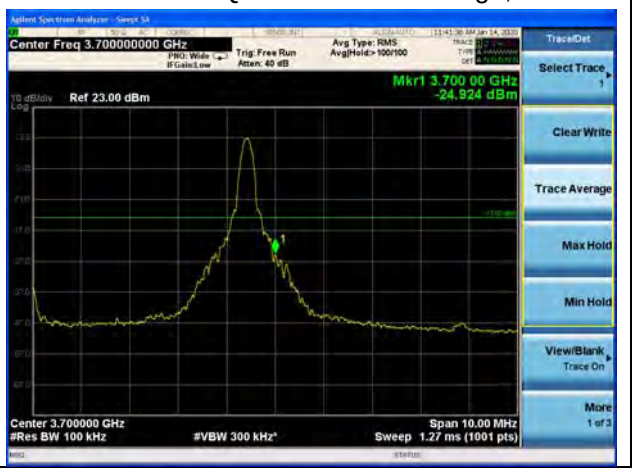
LTE Band 48 QPSK 5MHz CH-Low, 100%RB

LTE Band 48 QPSK 5MHz CH-High, 100%RB

LTE Band 48 QPSK 10MHz CH-Low, 1RB



LTE Band 48 QPSK 10MHz CH-High, 1RB



LTE Band 48 QPSK 10MHz CH-Low, 100%RB

LTE Band 48 QPSK 10MHz CH-High, 100%RB

LTE Band 48 QPSK 15MHz CH-Low, 1RB

LTE Band 48 QPSK 15MHz CH-High, 1RB

LTE Band 48 QPSK 15MHz CH-Low, 100%RB

LTE Band 48 QPSK 15MHz CH-High, 100%RB

LTE Band 48 QPSK 20MHz CH-Low, 1RB

LTE Band 48 QPSK 20MHz CH-High, 1RB

LTE Band 48 QPSK 20MHz CH-Low, 100%RB

LTE Band 48 QPSK 20MHz CH-High, 100%RB

LTE Band 48 16QAM 5MHz CH-Low, 1RB

LTE Band 48 16QAM 5MHz CH-High, 1RB

LTE Band 48 16QAM 5MHz CH-Low, 100%RB

LTE Band 48 16QAM 5MHz CH-High, 100%RB

LTE Band 48 16QAM 10MHz CH-Low, 1RB

LTE Band 48 16QAM 10MHz CH-High, 1RB

LTE Band 48 16QAM 10MHz CH-Low, 100%RB

LTE Band 48 16QAM 10MHz CH-High, 100%RB

LTE Band 48 16QAM 15MHz CH-Low, 1RB

LTE Band 48 16QAM 15MHz CH-High, 1RB

LTE Band 48 16QAM 15MHz CH-Low, 100%RB

LTE Band 48 16QAM 15MHz CH-High, 100%RB

LTE Band 48 16QAM 20MHz CH-Low, 1RB

LTE Band 48 16QAM 20MHz CH-High, 1RB

LTE Band 48 16QAM 20MHz CH-Low, 100%RB

LTE Band 48 16QAM 20MHz CH-High, 100%RB

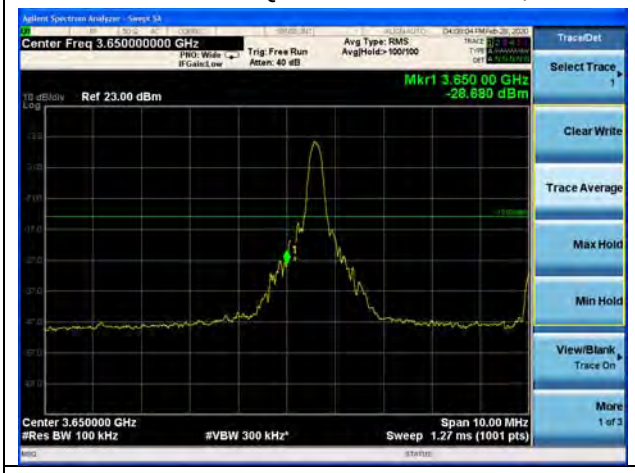
LTE Band 48 64QAM 5MHz CH-Low, 1RB

LTE Band 48 64QAM 5MHz CH-High, 1RB

LTE Band 48 64QAM 5MHz CH-Low, 100%RB

LTE Band 48 64QAM 5MHz CH-High, 100%RB

LTE Band 48 64QAM 10MHz CH-Low, 1RB



LTE Band 48 64QAM 10MHz CH-High, 1RB

LTE Band 48 64QAM 10MHz CH-Low, 100%RB

LTE Band 48 64QAM 10MHz CH-High, 100%RB

LTE Band 48 64QAM 15MHz CH-Low, 1RB

LTE Band 48 64QAM 15MHz CH-High, 1RB

LTE Band 48 64QAM 15MHz CH-Low, 100%RB

LTE Band 48 64QAM 15MHz CH-High, 100%RB

LTE Band 48 64QAM 20MHz CH-Low, 1RB

LTE Band 48 64QAM 20MHz CH-High, 1RB

LTE Band 48 64QAM 20MHz CH-Low, 100%RB

LTE Band 48 64QAM 20MHz CH-High, 100%RB

5.6. Frequency Stability

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

1. Frequency Stability (Temperature Variation)

   The temperature inside the climate chamber is varied from -40°C to +70°C in 10°C step size,

   (1) With all power removed, the temperature was decreased to 0°C and permitted to stabilize for three hours.

   (2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

   (3) Repeat the above measurements at 10°C increments from -40°C to +70°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

2. Frequency Stability (Voltage Variation)

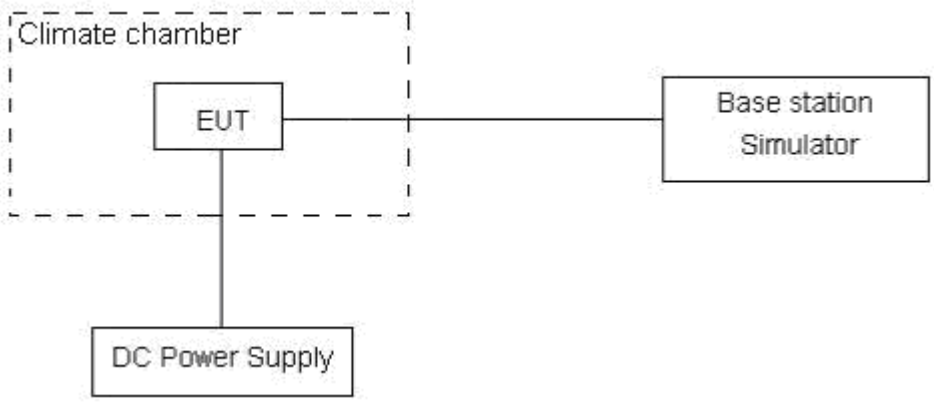
   The frequency stability shall be measured with variation of primary supply voltage as follows:

   (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

   (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

   This transceiver is specified to operate with an input voltage of between 3 V and 3.6 V, with a nominal voltage of 3.3V.

   Test setup



Limits

Requirements: FCC § 2.1055 (a)(d), The frequency stability shall be sufficient to ensure thatthe fundamental emissions stay within the authorized bands of operation.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75％ confidence level for thenormal distribution is with the coverage factor k = 3,U=0.01ppm.

Test Result

LTE Band43								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	12.01	17.36	7.25	0.00639	0.00923	0.00386	P
Extreme(70℃)		9.72	17.35	17.14	0.00517	0.00923	0.00912	P
Extreme(60℃)		14.89	6.04	4.79	0.00792	0.00321	0.00255	P
Extreme(50℃)		14.16	14.41	2.19	0.00753	0.00766	0.00117	P
Extreme(40℃)		13.14	12.99	16.45	0.00699	0.00691	0.00875	P
Extreme(30℃)		1.90	14.44	12.94	0.00101	0.00768	0.00688	P
Extreme(20℃)		17.71	5.35	7.25	0.00942	0.00285	0.00386	P
Extreme(10℃)		16.38	2.28	11.79	0.00871	0.00121	0.00627	P
Extreme(0℃)		9.52	7.52	4.17	0.00506	0.00400	0.00222	P
Extreme(-10℃)		6.31	9.60	11.60	0.00336	0.00511	0.00617	P
Extreme(-20℃)		2.15	6.68	3.94	0.00114	0.00355	0.00210	P
Extreme(-30℃)		17.39	4.17	2.60	0.00925	0.00222	0.00138	P
Extreme(-40℃)		13.40	5.41	8.00	0.00713	0.00288	0.00425	P
25℃	LV	13.97	9.05	10.35	0.00743	0.00481	0.00551	P
	HV	6.47	7.44	11.88	0.00344	0.00396	0.00632	P
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	13.26	1.34	6.03	0.00705	0.00071	0.00321	P
Extreme(70℃)		7.70	15.96	13.71	0.00410	0.00849	0.00729	P
Extreme(60℃)		6.77	6.35	15.05	0.00360	0.00338	0.00800	P
Extreme(50℃)		14.84	3.86	9.23	0.00789	0.00205	0.00491	P
Extreme(40℃)		3.88	12.19	9.60	0.00206	0.00648	0.00511	P
Extreme(30℃)		2.24	9.83	17.44	0.00119	0.00523	0.00928	P
Extreme(20℃)		13.22	11.85	13.05	0.00703	0.00630	0.00694	P
Extreme(10℃)		7.90	1.59	13.97	0.00420	0.00085	0.00743	P
Extreme(0℃)		4.70	14.16	7.18	0.00250	0.00753	0.00382	P
Extreme(-10℃)		3.33	2.58	3.41	0.00177	0.00137	0.00181	P
Extreme(-20℃)		14.50	1.75	16.60	0.00771	0.00093	0.00883	P
Extreme(-30℃)		17.63	9.86	12.09	0.00938	0.00525	0.00643	P
Extreme(-40℃)		10.05	14.73	3.79	0.00534	0.00783	0.00201	P
25℃	LV	2.30	2.92	13.77	0.00122	0.00155	0.00732	P

	HV	14.95	17.95	3.15	0.00795	0.00955	0.00168	P
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	13.94	17.81	6.65	0.00742	0.00948	0.00354	P
Extreme(70℃)		11.31	11.09	11.95	0.00602	0.00590	0.00635	P
Extreme(60℃)		3.21	10.18	7.84	0.00171	0.00542	0.00417	P
Extreme(50℃)		15.43	11.45	12.78	0.00821	0.00609	0.00680	P
Extreme(40℃)		15.96	2.51	6.40	0.00849	0.00134	0.00340	P
Extreme(30℃)		17.44	3.55	16.71	0.00928	0.00189	0.00889	P
Extreme(20℃)		13.64	5.38	4.03	0.00726	0.00286	0.00214	P
Extreme(10℃)		14.12	5.63	13.66	0.00751	0.00299	0.00726	P
Extreme(0℃)		9.65	16.39	4.45	0.00514	0.00872	0.00237	P
Extreme(-10℃)		14.47	13.39	11.39	0.00770	0.00712	0.00606	P
Extreme(-20℃)		11.60	11.41	6.68	0.00617	0.00607	0.00355	P
Extreme(-30℃)		10.15	4.70	5.22	0.00540	0.00250	0.00277	P
Extreme(-40℃)		8.63	8.12	16.56	0.00459	0.00432	0.00881	P
25℃	LV	7.29	15.93	11.92	0.00388	0.00847	0.00634	P
	HV	14.40	8.94	11.63	0.00766	0.00475	0.00619	P
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	20MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	17.92	1.03	2.50	0.00953	0.00055	0.00133	P
Extreme(70℃)		8.52	8.90	14.84	0.00453	0.00474	0.00790	P
Extreme(60℃)		14.11	4.90	3.65	0.00751	0.00261	0.00194	P
Extreme(50℃)		4.86	17.96	16.46	0.00258	0.00956	0.00876	P
Extreme(40℃)		8.37	16.04	4.50	0.00445	0.00853	0.00239	P
Extreme(30℃)		6.16	4.21	15.43	0.00328	0.00224	0.00821	P
Extreme(20℃)		11.40	5.08	5.23	0.00607	0.00270	0.00278	P
Extreme(10℃)		8.57	1.32	17.05	0.00456	0.00070	0.00907	P
Extreme(0℃)		15.33	14.69	1.02	0.00815	0.00781	0.00054	P
Extreme(-10℃)		4.52	16.46	11.79	0.00241	0.00876	0.00627	P
Extreme(-20℃)		16.16	8.63	17.23	0.00860	0.00459	0.00917	P
Extreme(-30℃)		12.48	8.86	2.19	0.00664	0.00471	0.00117	P
Extreme(-40℃)		15.75	14.55	1.78	0.00838	0.00774	0.00095	P
25℃	LV	6.56	7.32	14.76	0.00349	0.00390	0.00785	P
	HV	5.26	1.26	2.84	0.00280	0.00067	0.00151	P
Note:P=Pass								

LTE Band48								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	14.55	17.93	5.82	0.00774	0.00954	0.00309	P
Extreme(70℃)		17.19	12.38	4.64	0.00914	0.00659	0.00247	P
Extreme(60℃)		7.48	14.62	16.93	0.00398	0.00778	0.00901	P
Extreme(50℃)		17.52	3.05	17.19	0.00932	0.00162	0.00914	P
Extreme(40℃)		7.13	17.96	15.05	0.00379	0.00955	0.00801	P
Extreme(30℃)		17.98	7.82	7.75	0.00956	0.00416	0.00412	P
Extreme(20℃)		5.41	5.26	17.59	0.00288	0.00280	0.00936	P
Extreme(10℃)		2.18	17.02	2.37	0.00116	0.00905	0.00126	P
Extreme(0℃)		8.89	13.80	9.97	0.00473	0.00734	0.00530	P
Extreme(-10℃)		17.29	12.57	10.44	0.00920	0.00668	0.00555	P
Extreme(-20℃)		11.91	15.69	5.39	0.00634	0.00835	0.00287	P
Extreme(-30℃)		15.95	14.16	3.52	0.00849	0.00753	0.00187	P
Extreme(-40℃)		12.43	10.60	10.73	0.00661	0.00564	0.00571	P
25℃	LV	13.24	1.88	9.77	0.00705	0.00100	0.00520	P
	HV	3.10	11.16	6.36	0.00165	0.00594	0.00338	P
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	9.42	2.63	6.33	0.00501	0.00140	0.00337	P
Extreme(70℃)		15.79	1.07	15.74	0.00840	0.00057	0.00837	P
Extreme(60℃)		17.99	6.50	10.18	0.00957	0.00346	0.00542	P
Extreme(50℃)		5.24	13.65	14.90	0.00279	0.00726	0.00792	P
Extreme(40℃)		1.70	17.73	13.24	0.00090	0.00943	0.00704	P
Extreme(30℃)		9.17	14.04	9.59	0.00488	0.00747	0.00510	P
Extreme(20℃)		9.01	3.37	12.56	0.00479	0.00179	0.00668	P
Extreme(10℃)		2.92	12.24	3.80	0.00156	0.00651	0.00202	P
Extreme(0℃)		11.10	10.99	13.20	0.00590	0.00584	0.00702	P
Extreme(-10℃)		7.42	14.70	12.51	0.00395	0.00782	0.00665	P
Extreme(-20℃)		9.64	4.44	5.23	0.00513	0.00236	0.00278	P
Extreme(-30℃)		2.67	15.94	5.20	0.00142	0.00848	0.00277	P
Extreme(-40℃)		5.92	16.35	11.76	0.00315	0.00869	0.00625	P
25℃	LV	9.24	10.12	3.62	0.00491	0.00538	0.00192	P
	HV	8.33	1.75	7.10	0.00443	0.00093	0.00378	P

Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	15.50	7.88	8.32	0.00824	0.00419	0.00443	P
Extreme(70℃)		12.48	8.87	7.95	0.00664	0.00472	0.00423	P
Extreme(60℃)		9.73	1.04	2.20	0.00517	0.00055	0.00117	P
Extreme(50℃)		3.87	12.12	2.42	0.00206	0.00644	0.00129	P
Extreme(40℃)		6.89	8.84	14.07	0.00366	0.00470	0.00748	P
Extreme(30℃)		14.36	15.23	16.97	0.00764	0.00810	0.00902	P
Extreme(20℃)		16.76	13.47	5.88	0.00891	0.00717	0.00313	P
Extreme(10℃)		17.19	12.21	4.51	0.00914	0.00649	0.00240	P
Extreme(0℃)		7.72	9.11	12.89	0.00411	0.00484	0.00686	P
Extreme(-10℃)		12.99	7.27	3.52	0.00691	0.00387	0.00187	P
Extreme(-20℃)		6.82	7.70	16.32	0.00363	0.00410	0.00868	P
Extreme(-30℃)		16.34	13.21	2.59	0.00869	0.00702	0.00138	P
Extreme(-40℃)		10.27	10.68	1.61	0.00547	0.00568	0.00086	P
25℃	LV	11.58	16.23	9.00	0.00616	0.00863	0.00479	P
	HV	3.27	3.24	3.87	0.00174	0.00172	0.00206	P
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	20MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal(25℃)	Normal	8.50	5.80	2.62	0.00452	0.00308	0.00139	P
Extreme(70℃)		14.90	12.72	9.21	0.00792	0.00677	0.00490	P
Extreme(60℃)		1.13	7.98	17.90	0.00060	0.00424	0.00952	P
Extreme(50℃)		9.02	14.96	13.56	0.00480	0.00796	0.00721	P
Extreme(40℃)		10.73	17.33	16.42	0.00571	0.00922	0.00873	P
Extreme(30℃)		13.61	14.28	13.07	0.00724	0.00759	0.00695	P
Extreme(20℃)		9.59	14.42	10.23	0.00510	0.00767	0.00544	P
Extreme(10℃)		13.12	9.75	4.24	0.00698	0.00519	0.00226	P
Extreme(0℃)		5.01	12.19	6.69	0.00267	0.00648	0.00356	P
Extreme(-10℃)		16.77	14.93	16.85	0.00892	0.00794	0.00896	P
Extreme(-20℃)		2.98	1.47	14.95	0.00159	0.00078	0.00795	P
Extreme(-30℃)		2.84	3.51	13.80	0.00151	0.00186	0.00734	P
Extreme(-40℃)		4.18	4.76	4.24	0.00222	0.00253	0.00226	P
25℃	LV	1.12	16.26	11.43	0.00060	0.00865	0.00608	P
	HV	16.80	16.98	14.50	0.00894	0.00903	0.00771	P
Note:P=Pass								

5.7. Spurious Emissions at Antenna Terminals

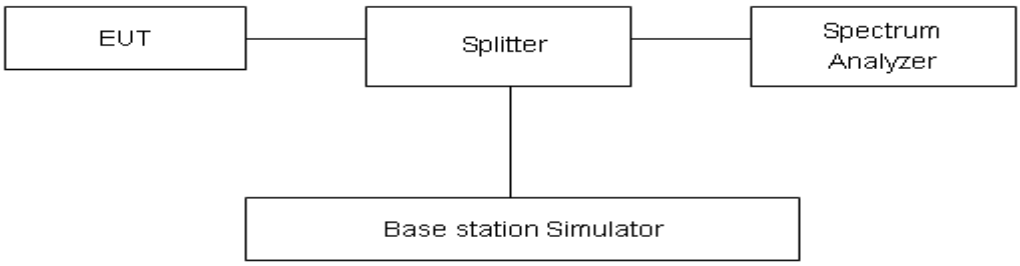
Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHzto the 10th harmonic of the carrier. The peak detector is used.
RBW =0.001MHz, VBW=0.003MHz for 9kHz-150kHz;
RBW =0.01MHz, VBW=0.03MHzfor 150kHz-30MHz;
RBW =0.1MHz, VBW=0.3MHzfor 30MHz-1GHz;
RBW =1MHz, VBW=3MHzfor above 1GHz; Sweep is set to ATUO.

Test setup



Limits

Rule Part 2.1051&90.1323 specifies 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.”

Limit	-13 dBm

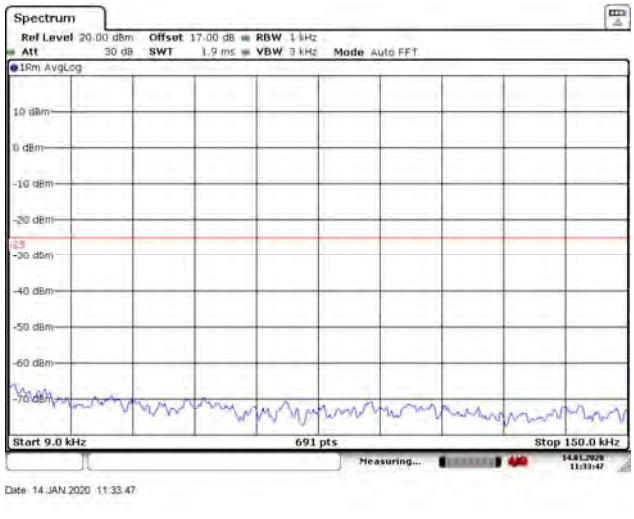
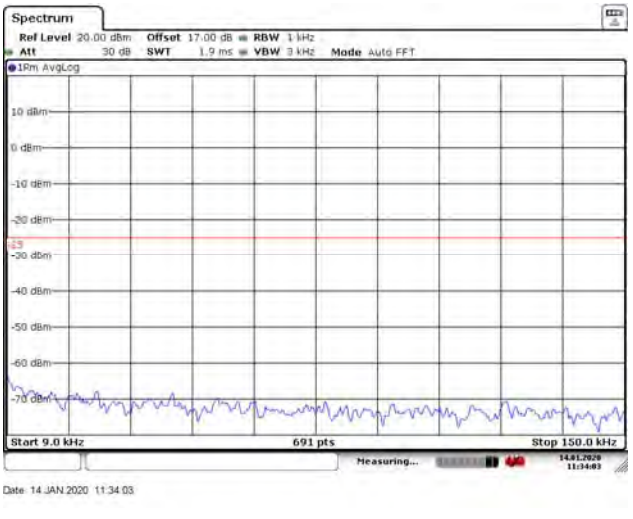
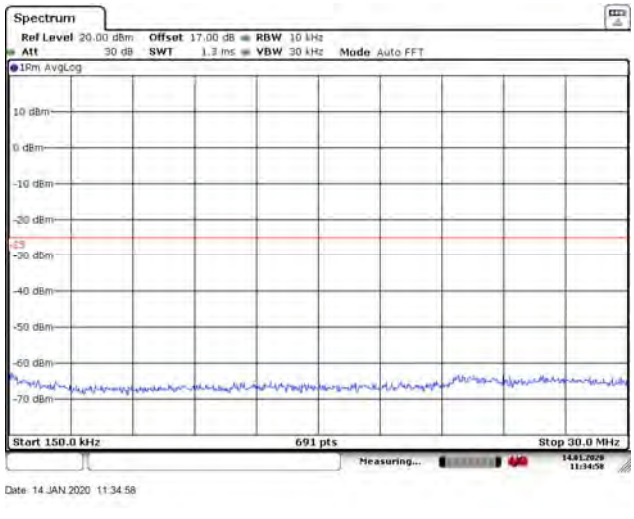
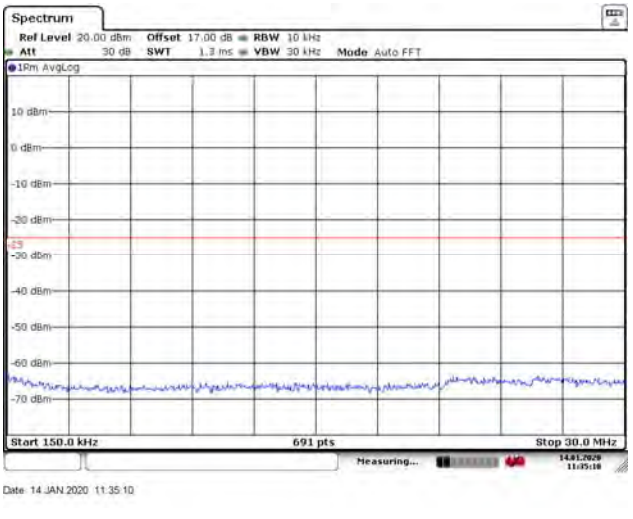
Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor k = 1.96.

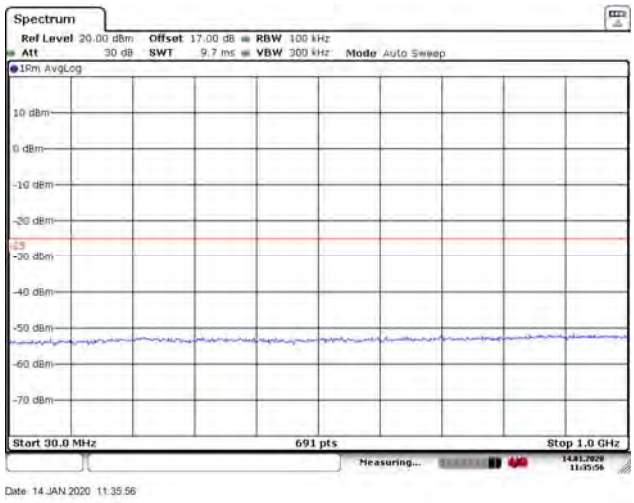
Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-3GHz	1.407 dB
3GHz-40GHz	1.815 dB

Test Result:

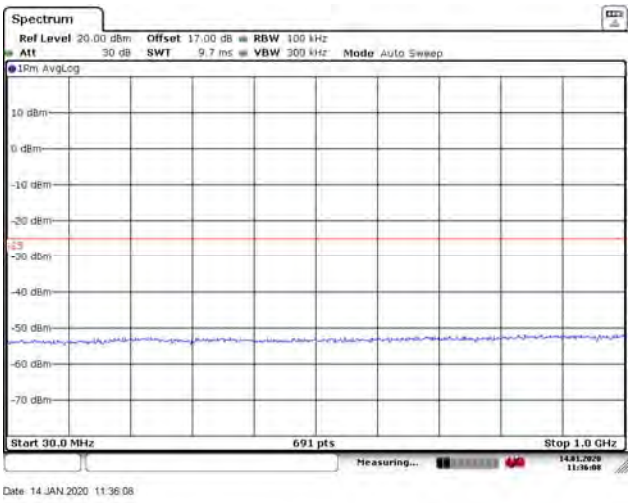
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.
The signal beyond the limit is carrier in the following plots.

LTE Band 43 5MHz CH Low 9KHz~150KHz	LTE Band 43 5MHz CH Middle 9KHz~150KHz
	
LTE Band 43 5MHz CH Low 150KHz~30MHz	LTE Band 43 5MHz CH Middle 150KHz~30MHz
	

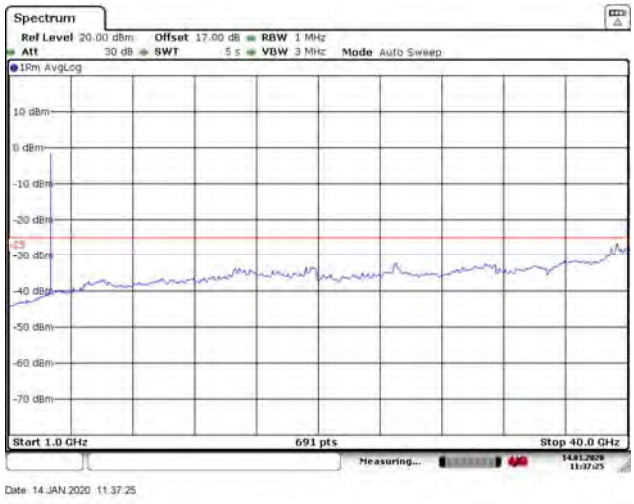
LTE Band 43 5MHz CH Low 30MHz~1GHz



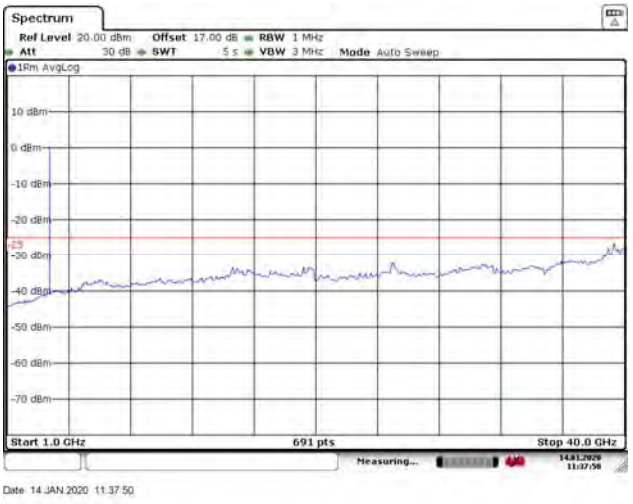
LTE Band 43 5MHz CH Middle 30MHz~1GHz



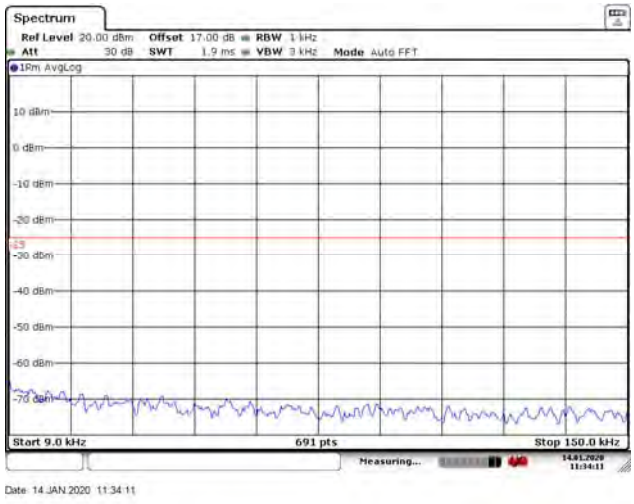
LTE Band 43 5MHz CH Low 1GHz~40GHz



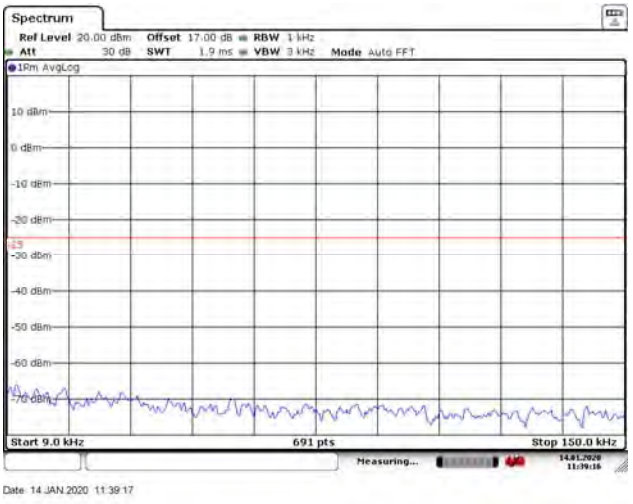
LTE Band 43 5MHz CH Middle 1GHz~40GHz



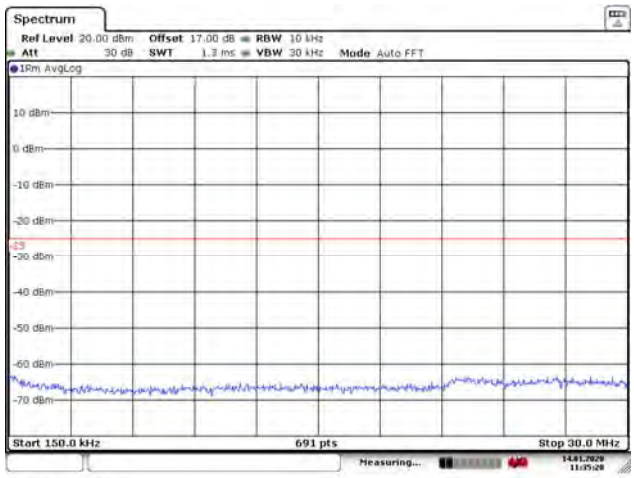
LTE Band 43 5MHz CH High 9KHz~150KHz



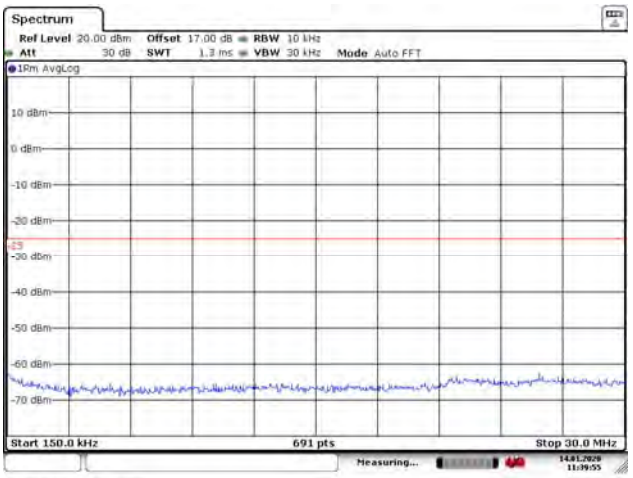
LTE Band 43 10MHz CH Low 9KHz~150KHz



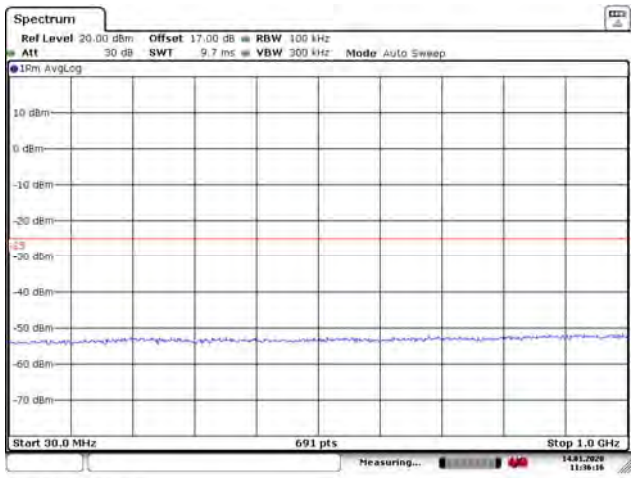
LTE Band 43 5MHz CH High 150KHz~30MHz



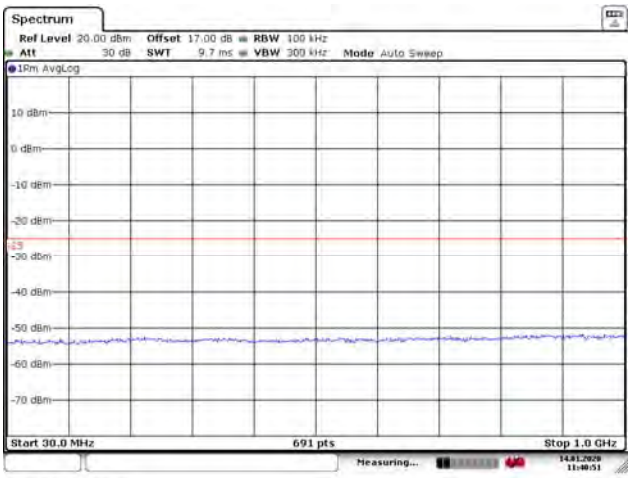
LTE Band 43 10MHz CH Low 150KHz~30MHz



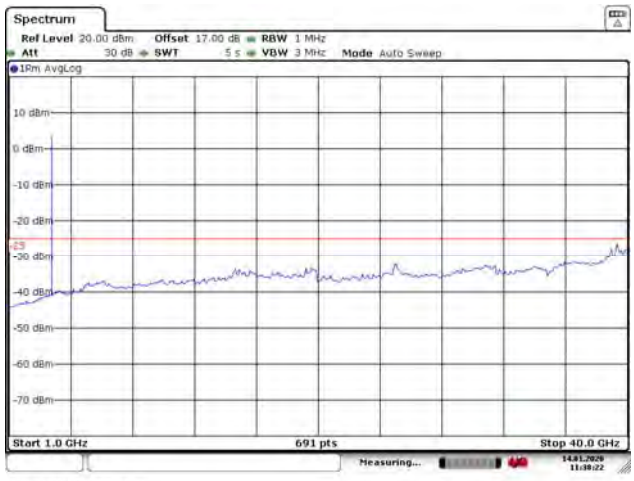
LTE Band 43 5MHz CH High 30MHz~1GHz



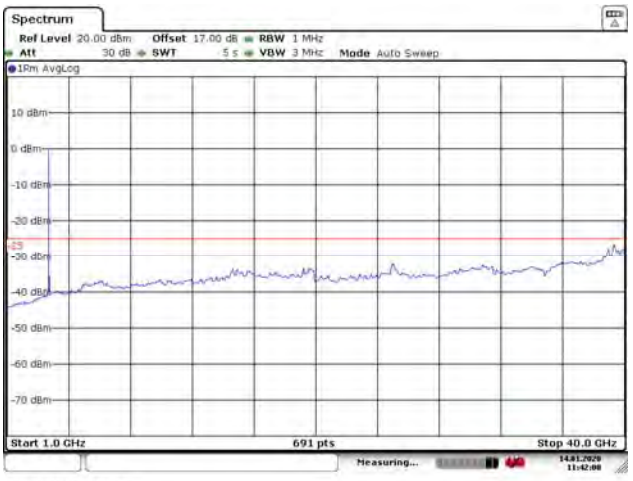
LTE Band 43 10MHz CH Low 30MHz~1GHz



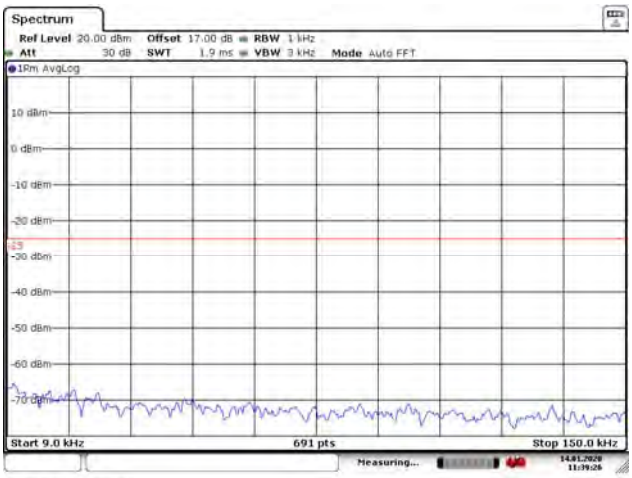
LTE Band 43 5MHz CH High 1GHz~40GHz



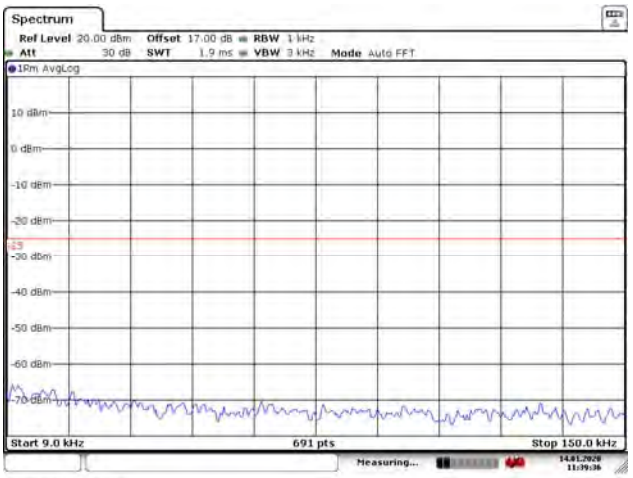
LTE Band 43 10MHz CH Low 1GHz~40GHz



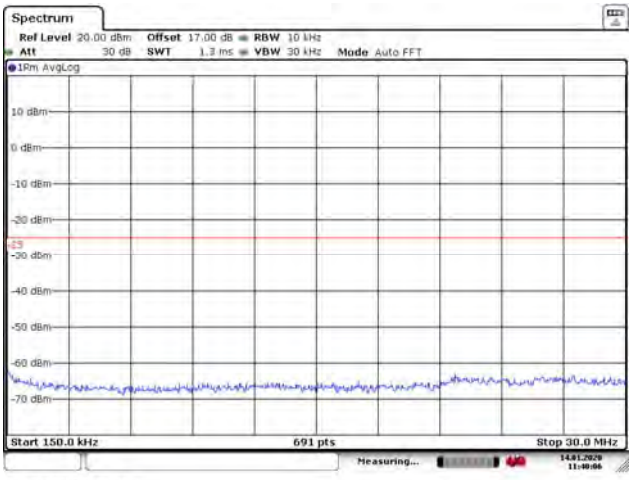
LTE Band 43 10MHz CH Middle 9KHz~150KHz



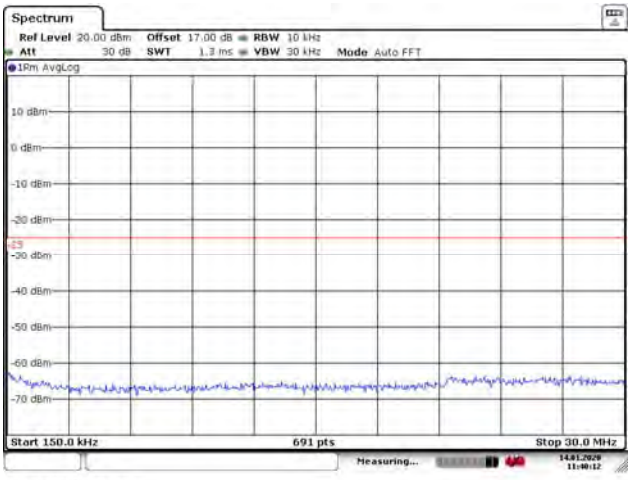
LTE Band 43 10MHz CH High 9KHz~150KHz



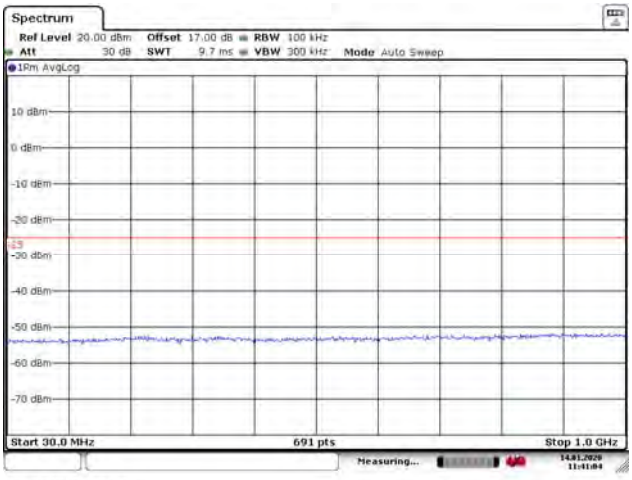
LTE Band 43 10MHz CH Middle 150KHz~30MHz



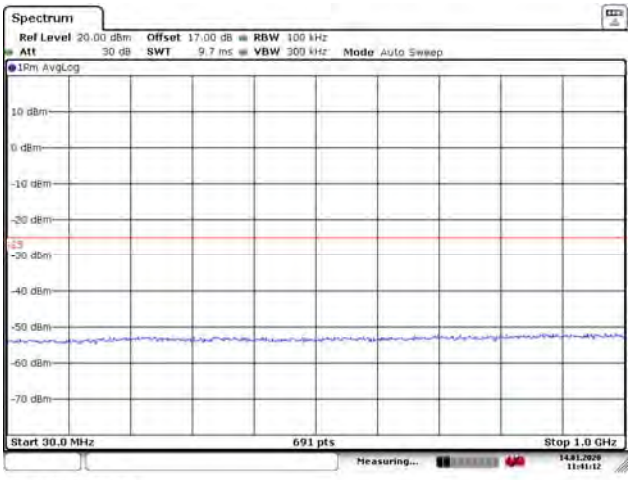
LTE Band 43 10MHz CH High 150KHz~30MHz



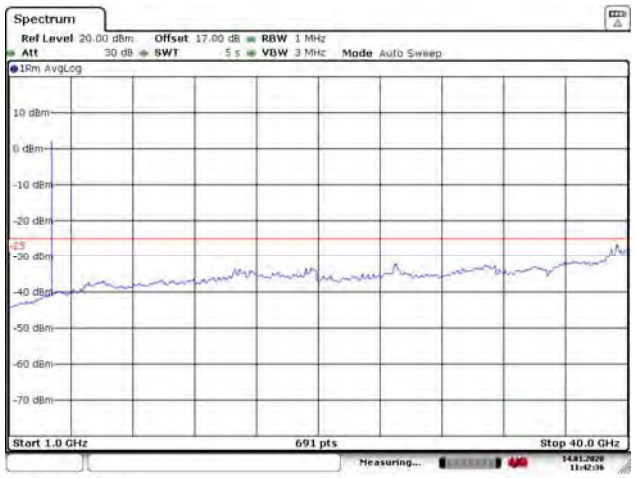
LTE Band 43 10MHz CH Middle 30MHz~1GHz



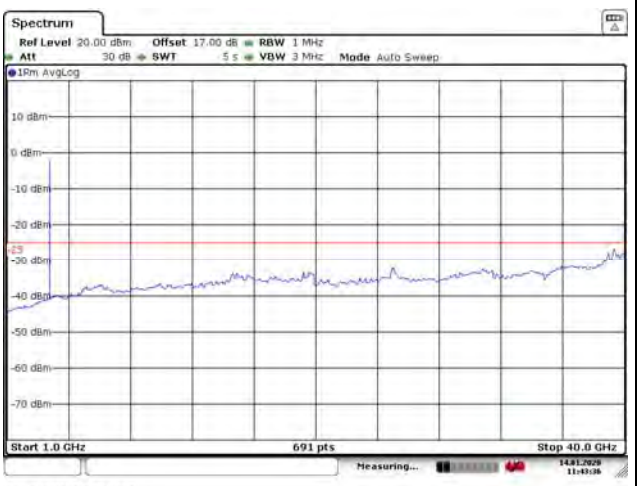
LTE Band 43 10MHz CH High 30MHz~1GHz



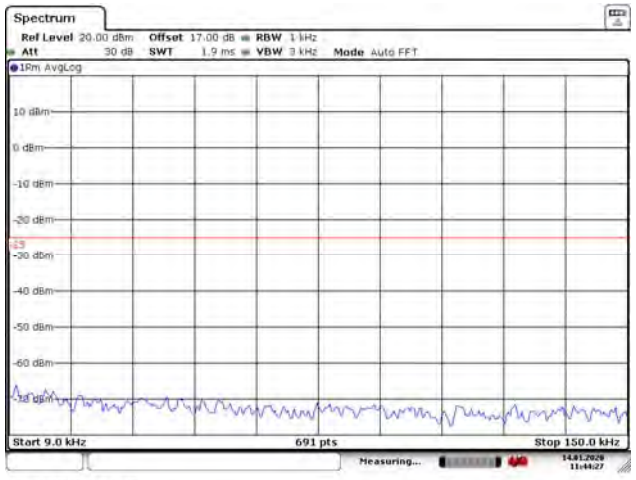
LTE Band 43 10MHz CH Middle 1GHz~40GHz



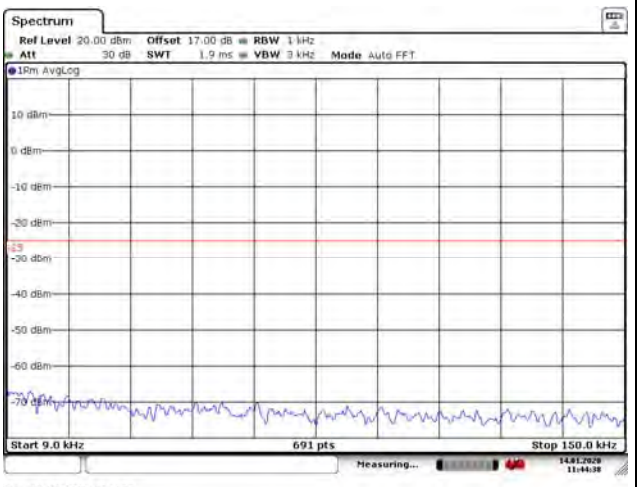
LTE Band 43 10MHz CH High 1GHz~40GHz



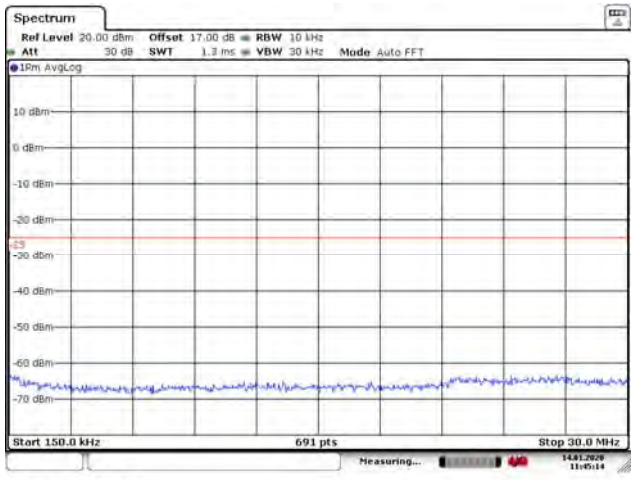
LTE Band 43 15MHz CH Low 9KHz~150KHz



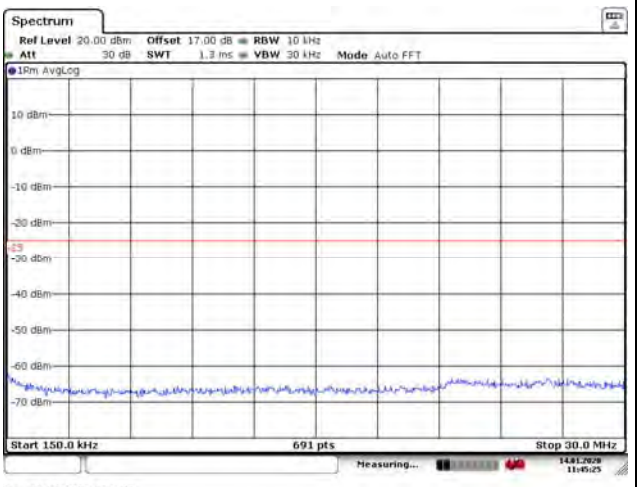
LTE Band 43 15MHz CH Middle 9KHz~150KHz



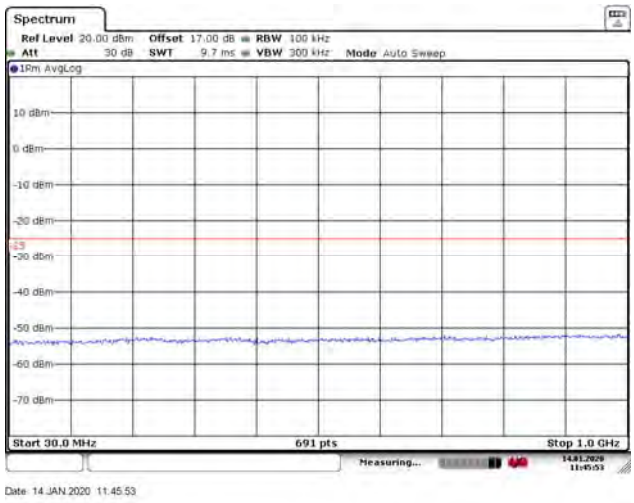
LTE Band 43 15MHz CH Low 150KHz~30MHz



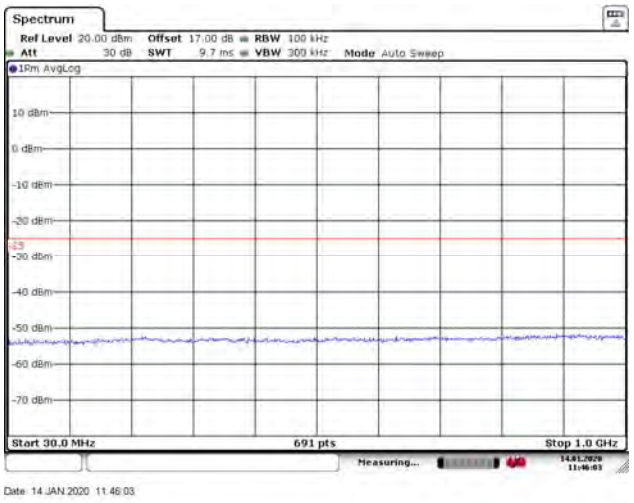
LTE Band 43 15MHz CH Middle 150KHz~30MHz



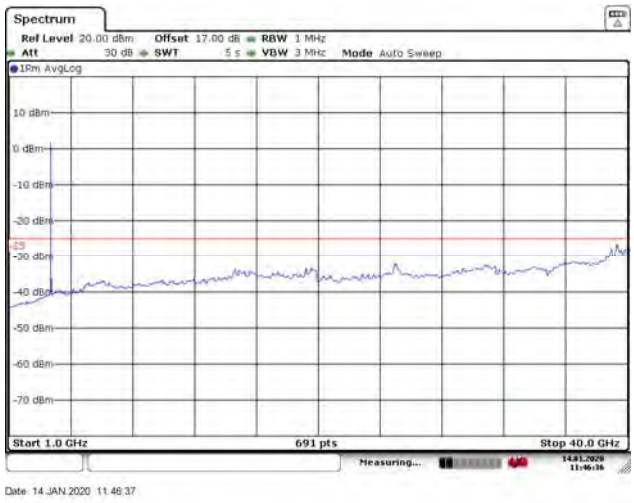
LTE Band 43 15MHz CH Low 30MHz~1GHz



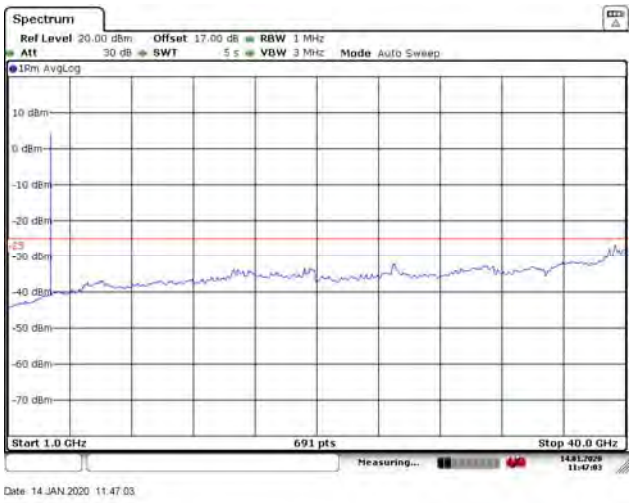
LTE Band 43 15MHz CH Middle 30MHz~1GHz



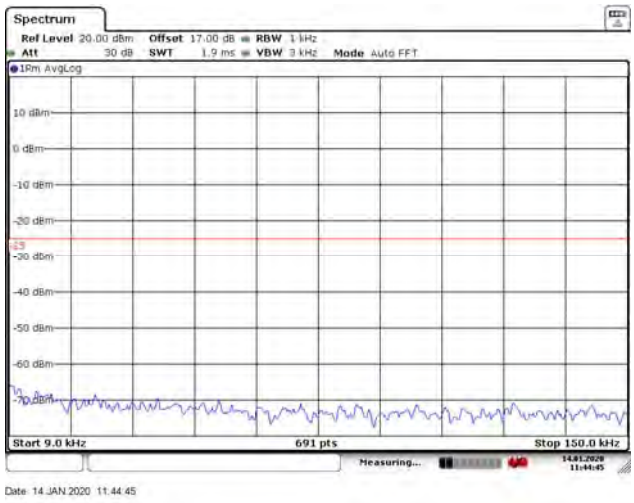
LTE Band 43 15MHz CH Low 1GHz~40GHz



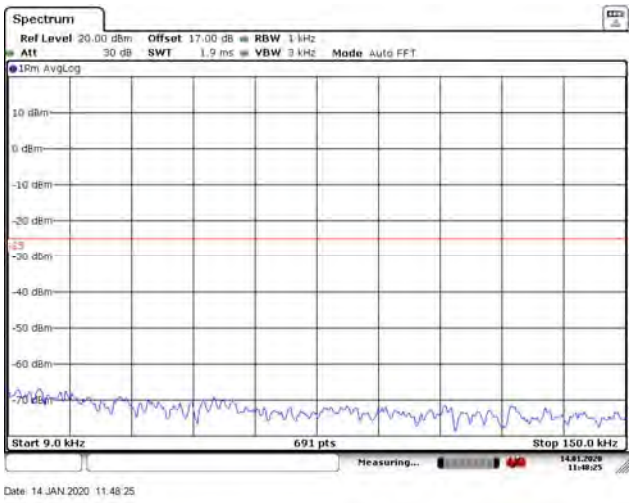
LTE Band 43 15MHz CH Middle 1GHz~40GHz



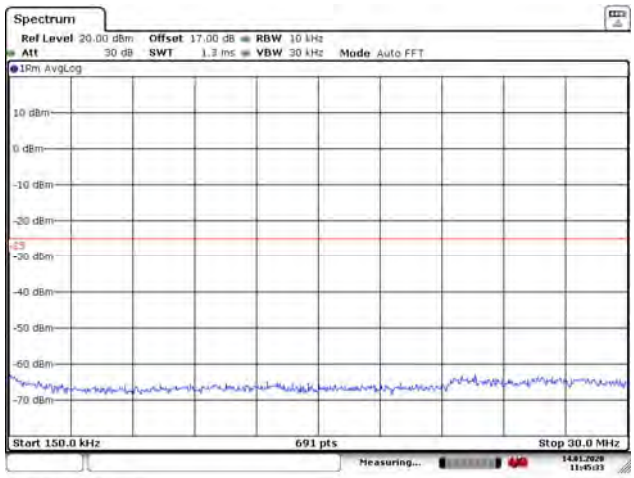
LTE Band 43 15MHz CH High 9KHz~150KHz



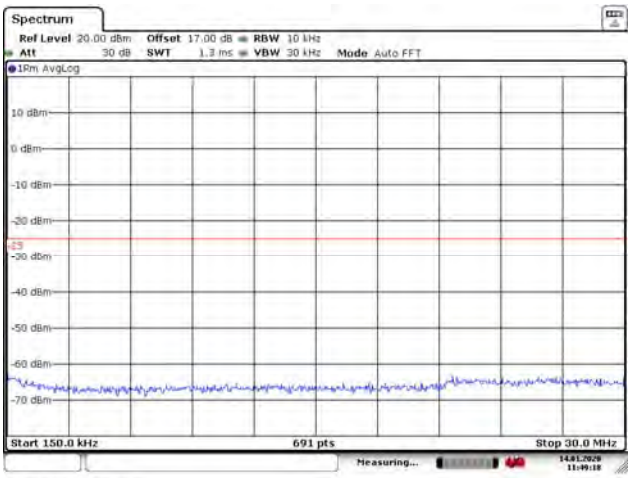
LTE Band 43 20MHz CH Low 9KHz~150KHz



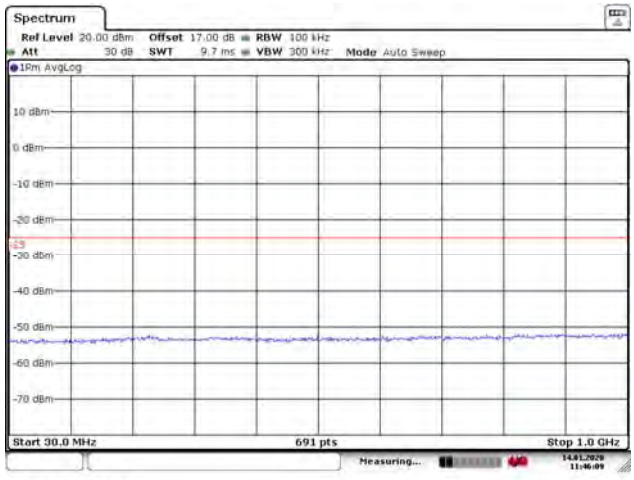
LTE Band 43 15MHz CH High 150KHz~30MHz



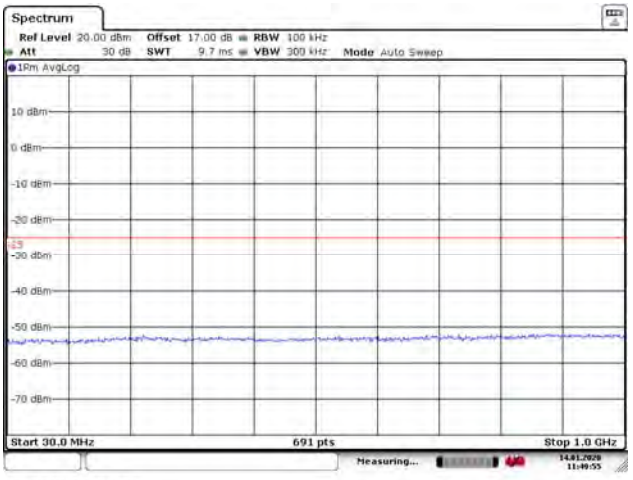
LTE Band 43 20MHz CH Low 150KHz~30MHz



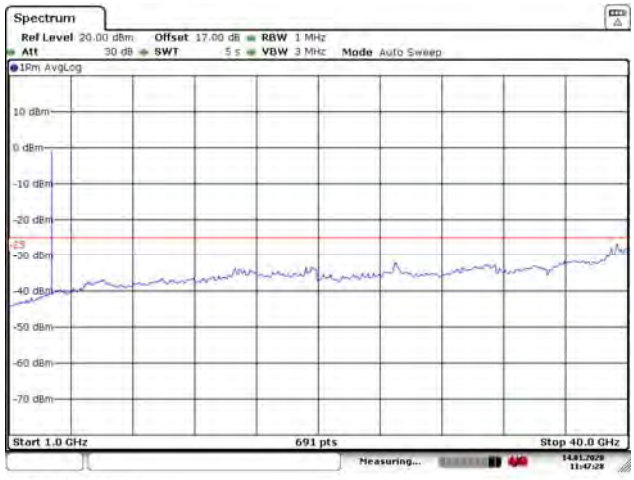
LTE Band 43 15MHz CH High 30MHz~1GHz



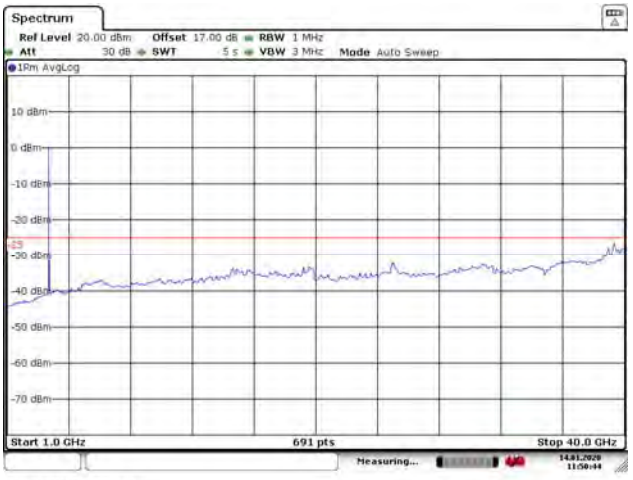
LTE Band 43 20MHz CH Low 30MHz~1GHz



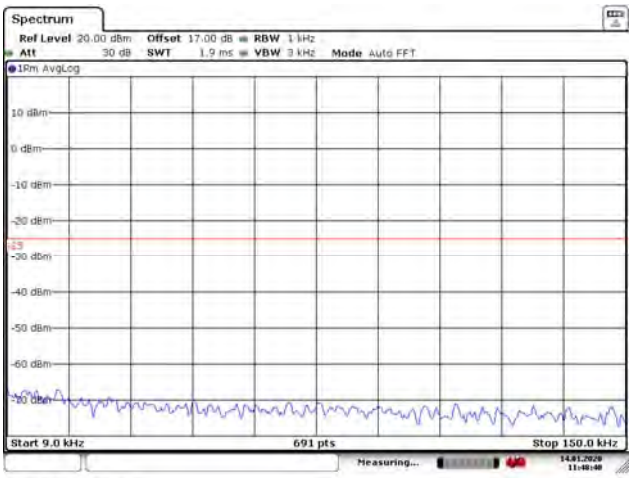
LTE Band 43 15MHz CH High 1GHz~40GHz



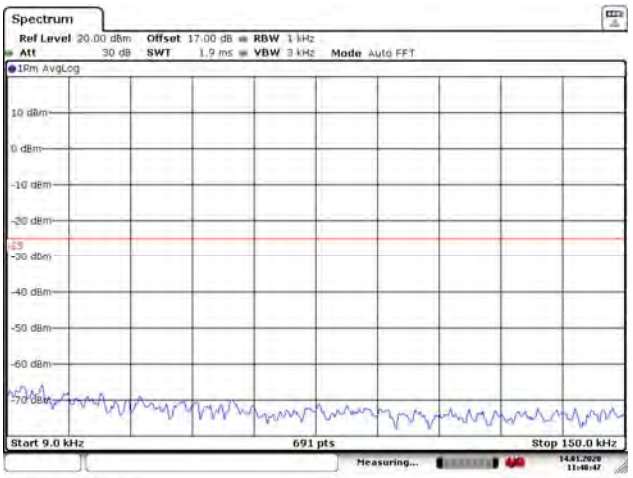
LTE Band 43 20MHz CH Low 1GHz~40GHz



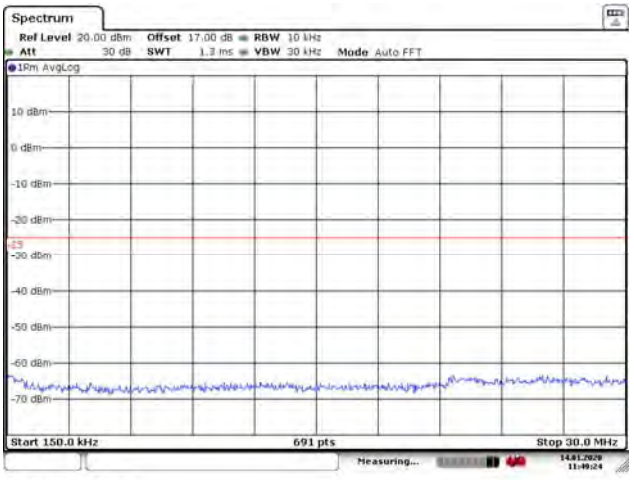
LTE Band 43 20MHz CH Middle 9KHz~150KHz



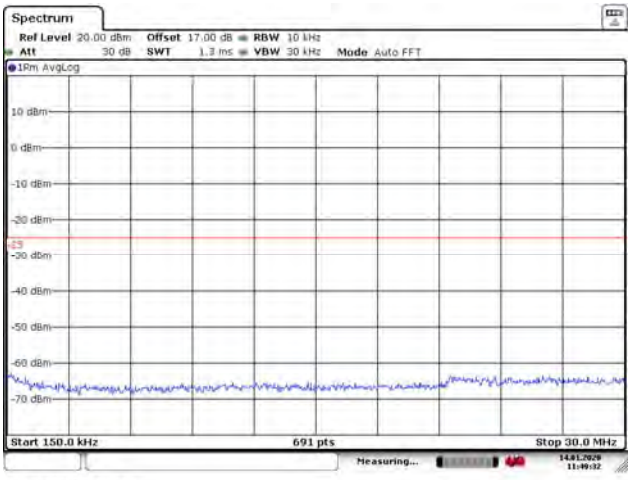
LTE Band 43 20MHz CH High 9KHz~150KHz



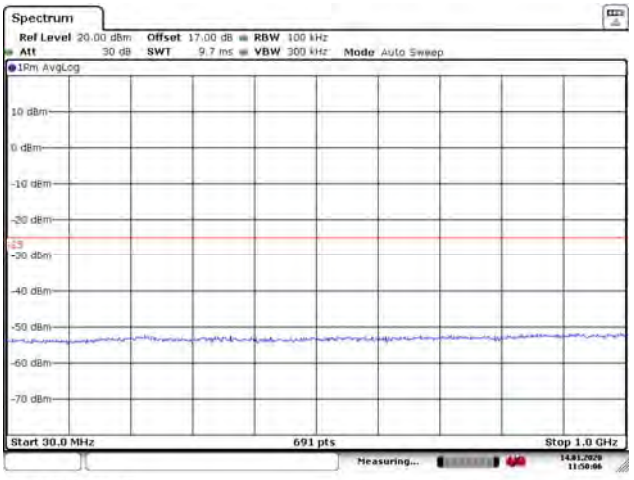
LTE Band 43 20MHz CH Middle 150KHz~30MHz



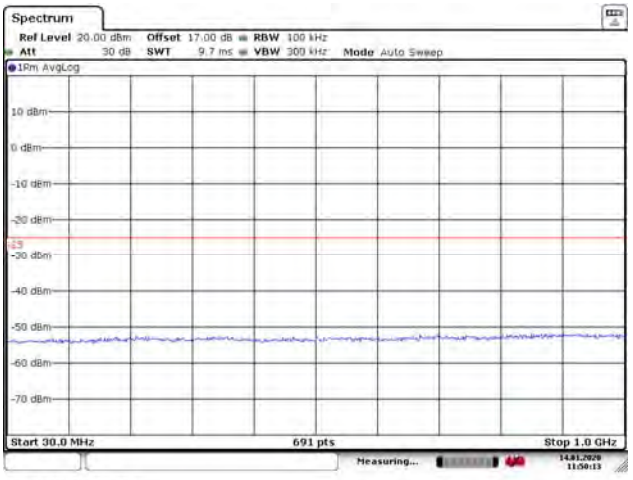
LTE Band 43 20MHz CH High 150KHz~30MHz



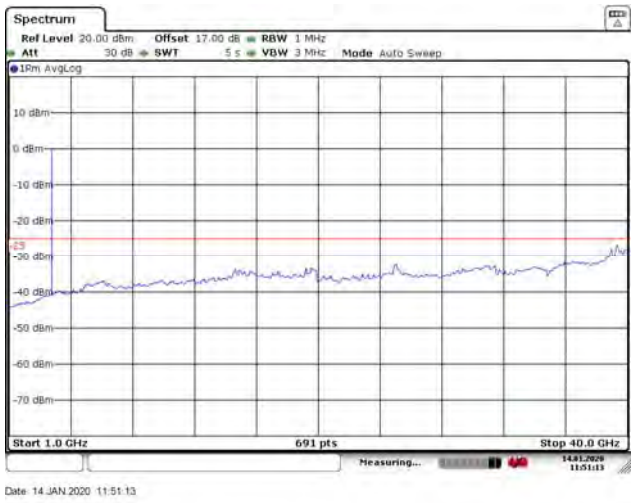
LTE Band 43 20MHz CH Middle 30MHz~1GHz



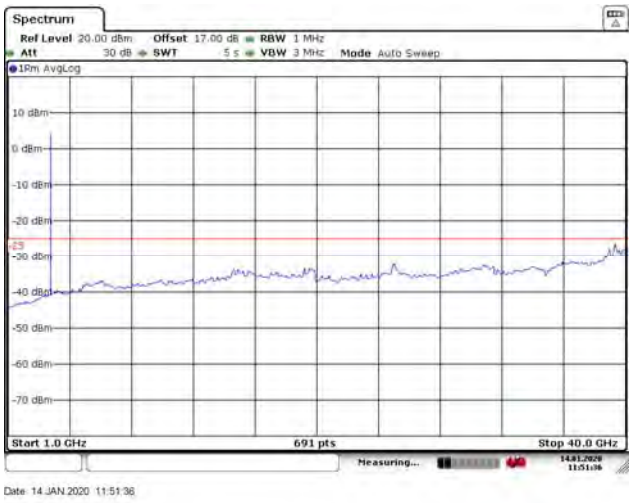
LTE Band 43 20MHz CH High 30MHz~1GHz



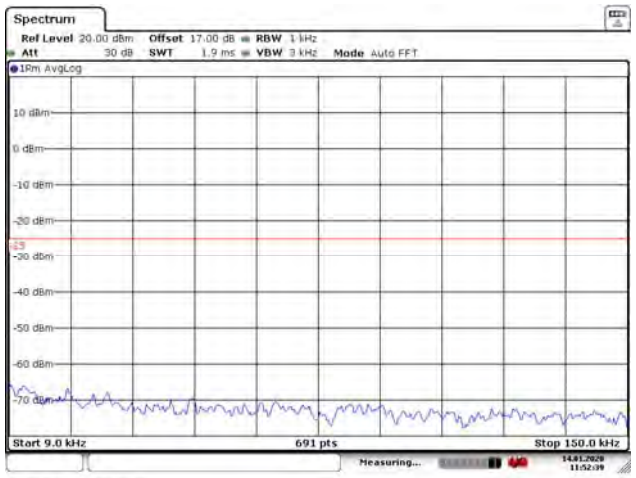
LTE Band 43 20MHz CH Middle 1GHz~40GHz



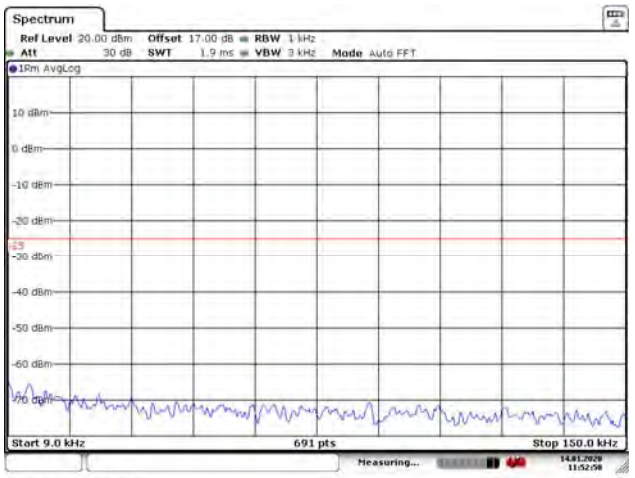
LTE Band 43 20MHz CH High 1GHz~40GHz



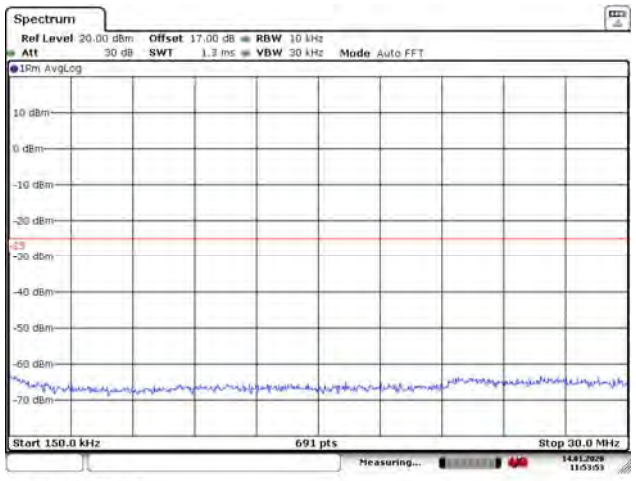
LTE Band 48 5MHz CH Low 9KHz~150KHz



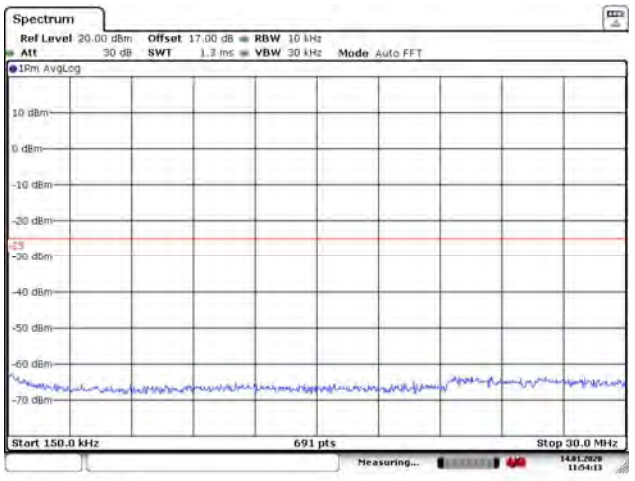
LTE Band 48 5MHz CH Middle 9KHz~150KHz



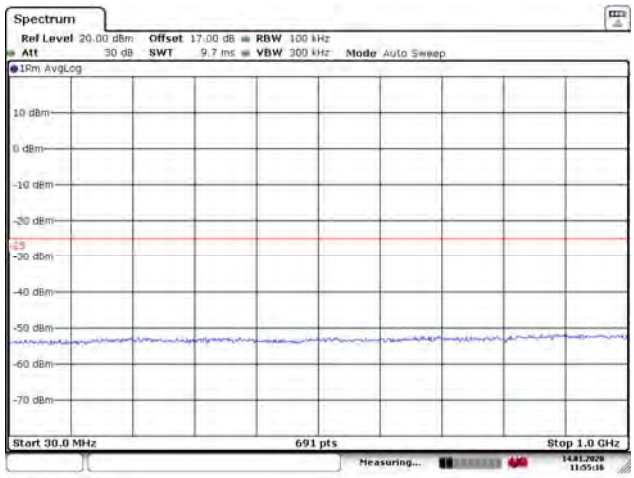
LTE Band 48 5MHz CH Low 150KHz~30MHz



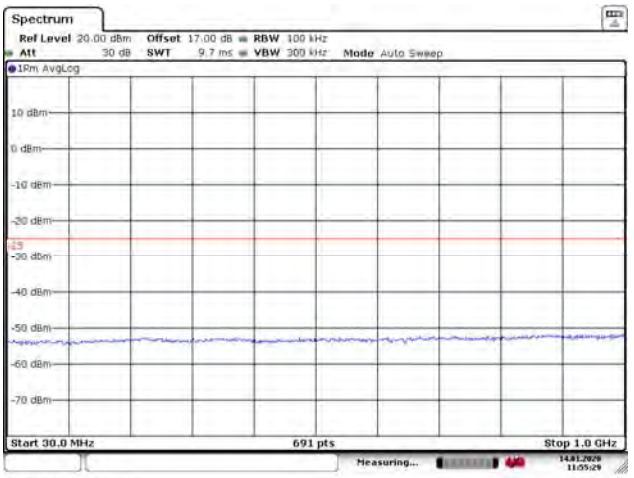
LTE Band 48 5MHz CH Middle 150KHz~30MHz



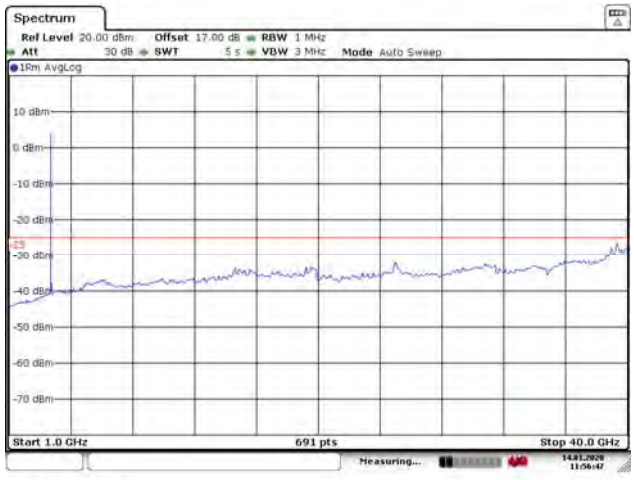
LTE Band 48 5MHz CH Low 30MHz~1GHz



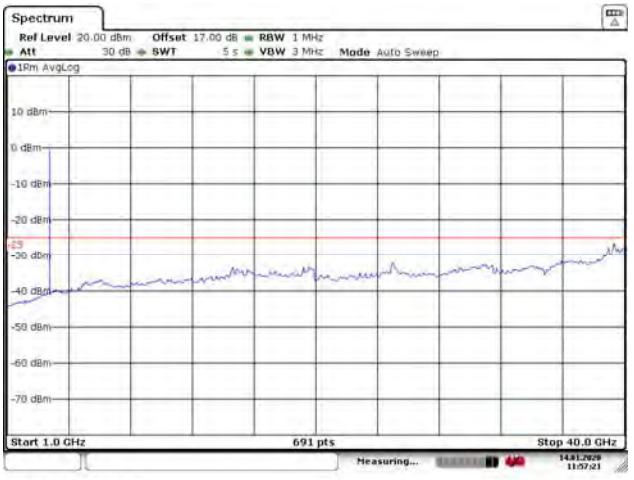
LTE Band 48 5MHz CH Middle 30MHz~1GHz



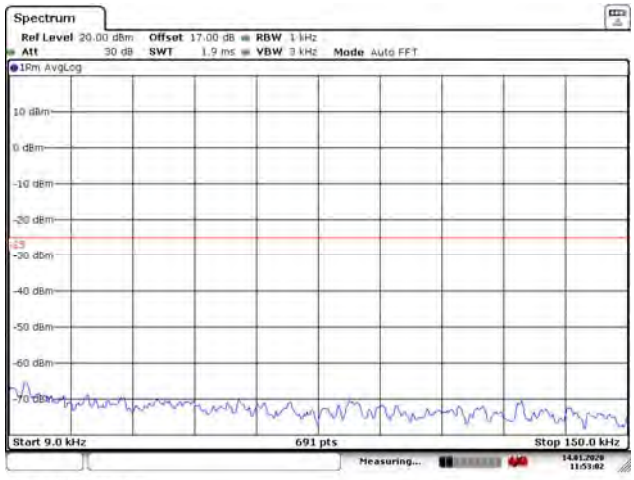
LTE Band 48 5MHz CH Low 1GHz~40GHz



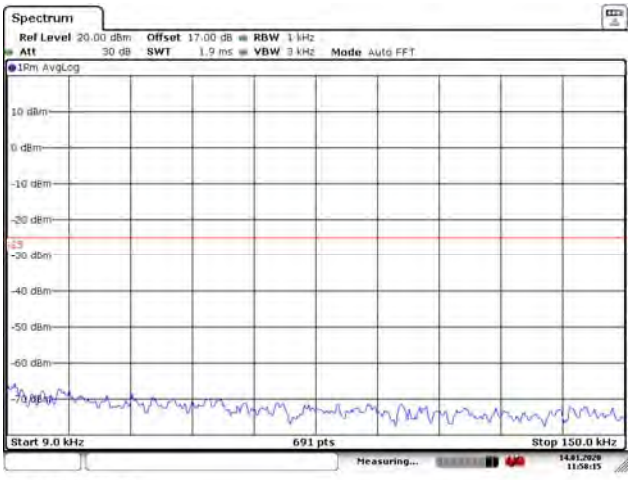
LTE Band 48 5MHz CH Middle 1GHz~40GHz



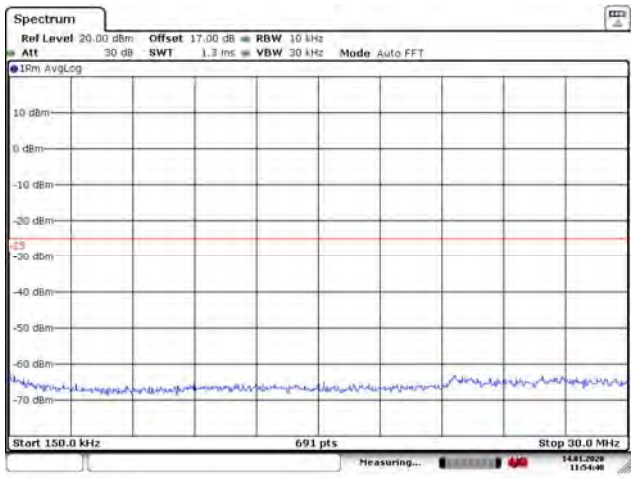
LTE Band 48 5MHz CH High 9KHz~150KHz



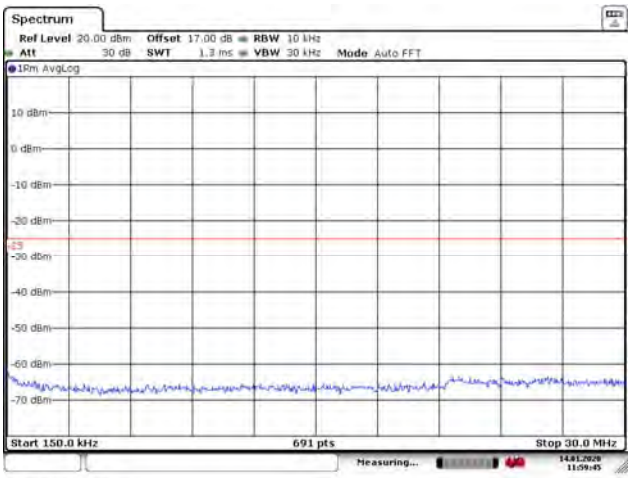
LTE Band 48 10MHz CH Low 9KHz~150KHz



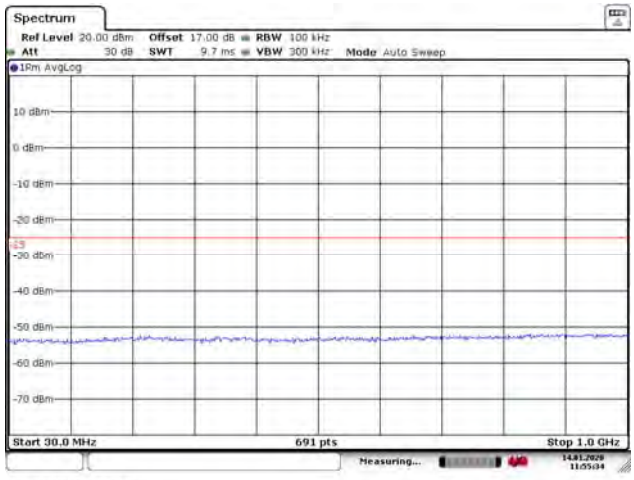
LTE Band 48 5MHz CH High 150KHz~30MHz



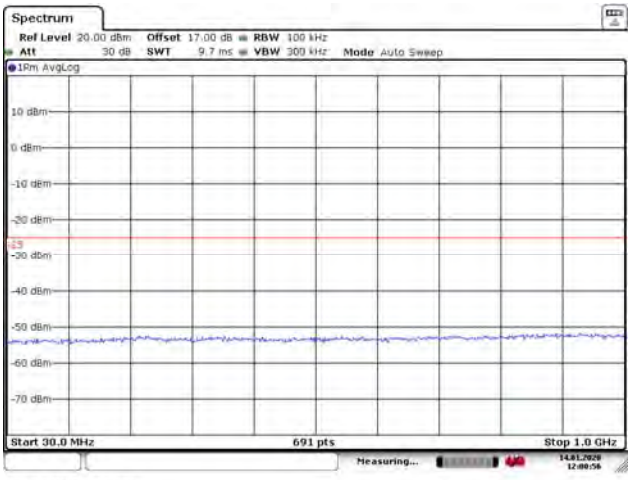
LTE Band 48 10MHz CH Low 150KHz~30MHz



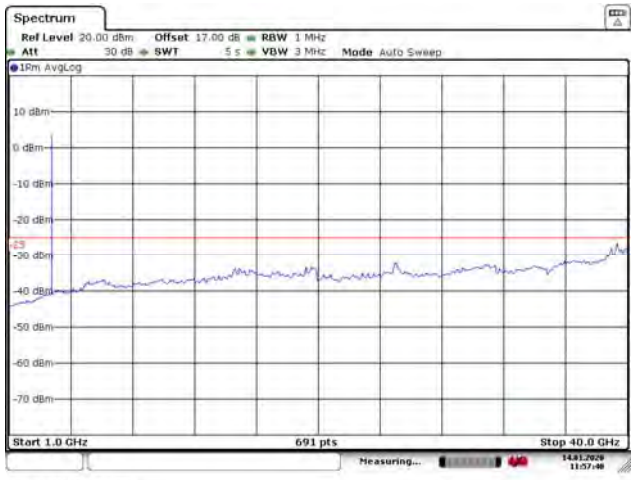
LTE Band 48 5MHz CH High 30MHz~1GHz



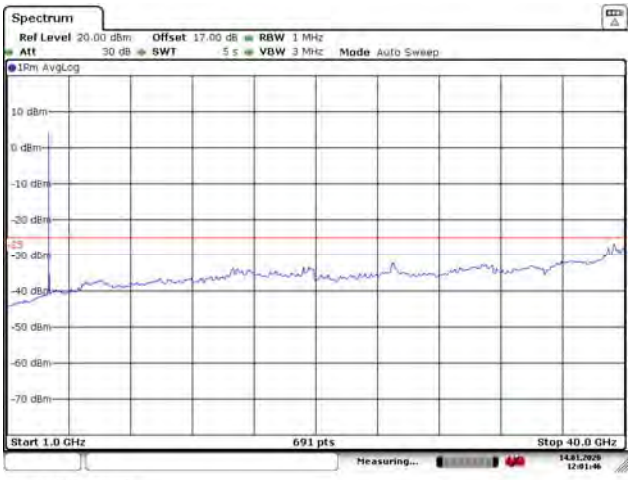
LTE Band 48 10MHz CH Low 30MHz~1GHz



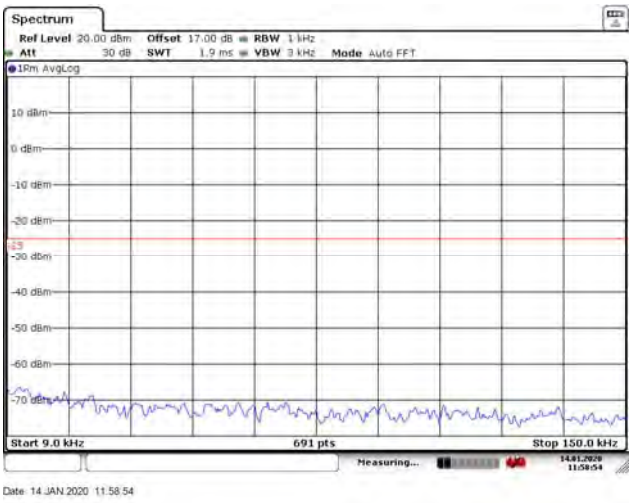
LTE Band 48 5MHz CH High 1GHz~40GHz



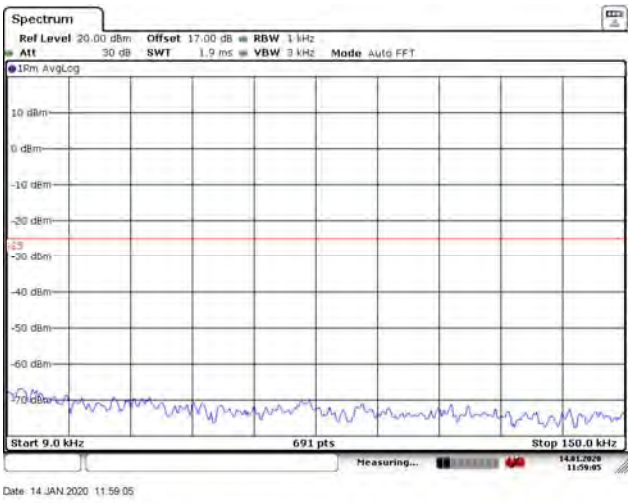
LTE Band 48 10MHz CH Low 1GHz~40GHz



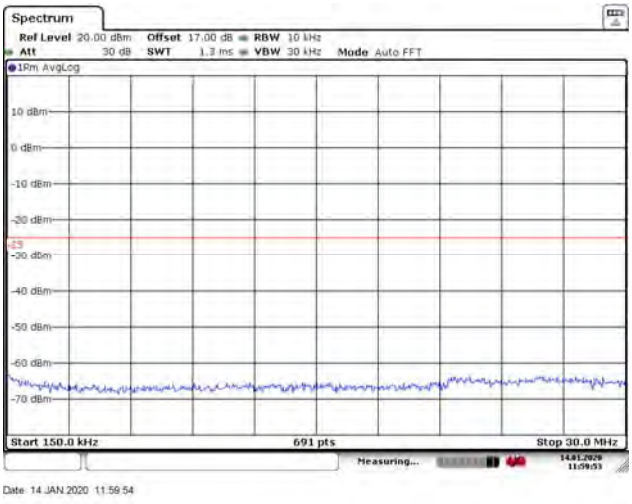
LTE Band 48 10MHz CH Middle 9KHz~150KHz



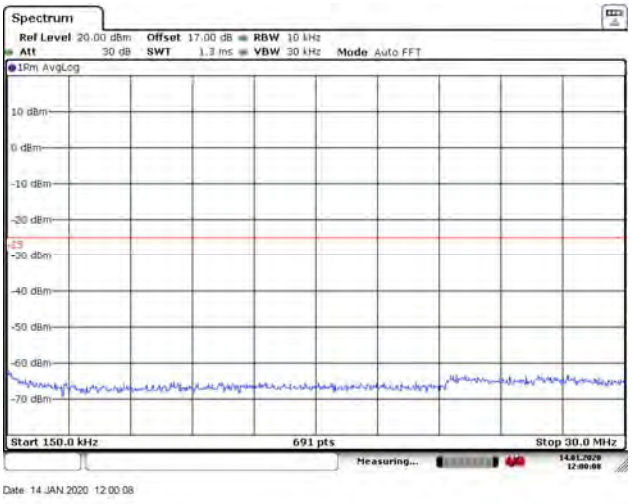
LTE Band 48 10MHz CH High 9KHz~150KHz



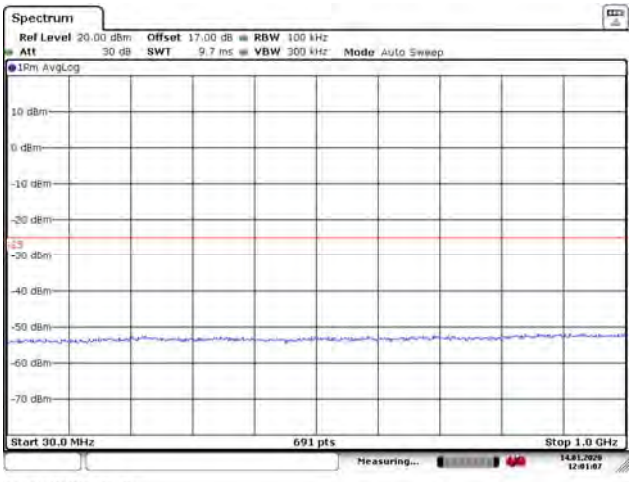
LTE Band 48 10MHz CH Middle 150KHz~30MHz



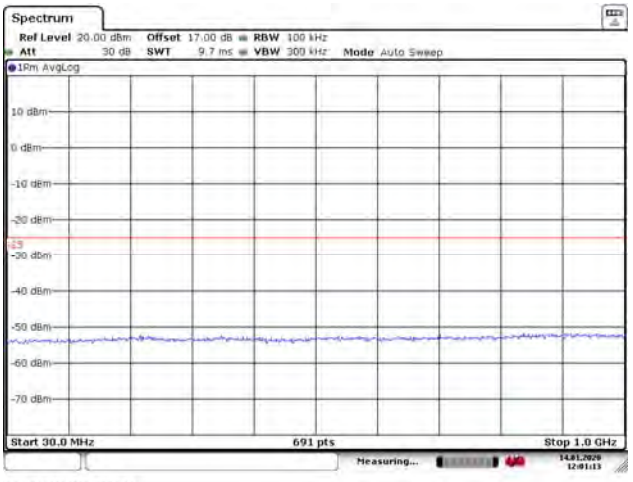
LTE Band 48 10MHz CH High 150KHz~30MHz



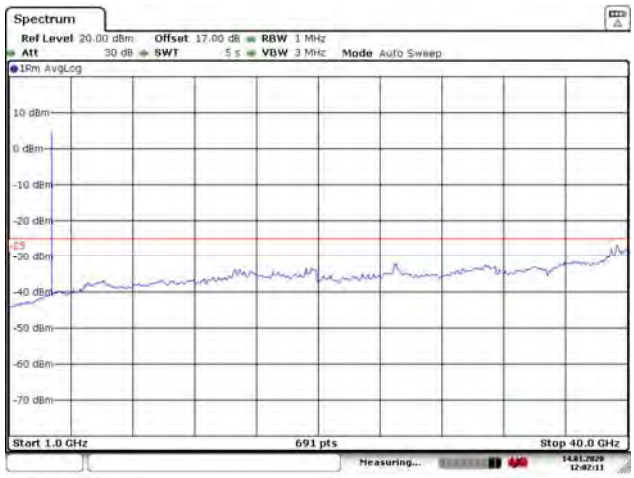
LTE Band 48 10MHz CH Middle 30MHz~1GHz



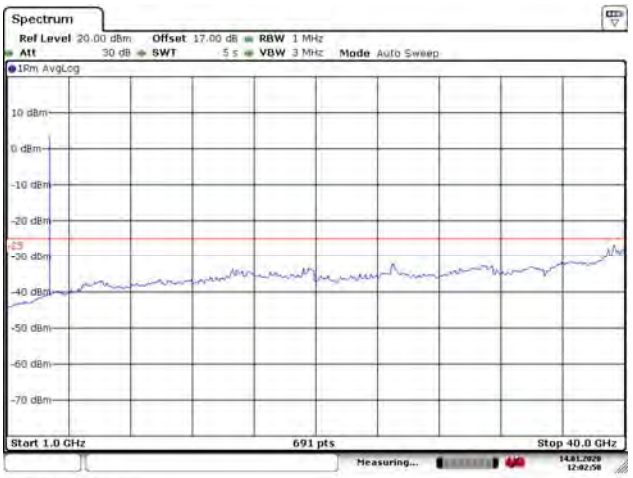
LTE Band 48 10MHz CH High 30MHz~1GHz



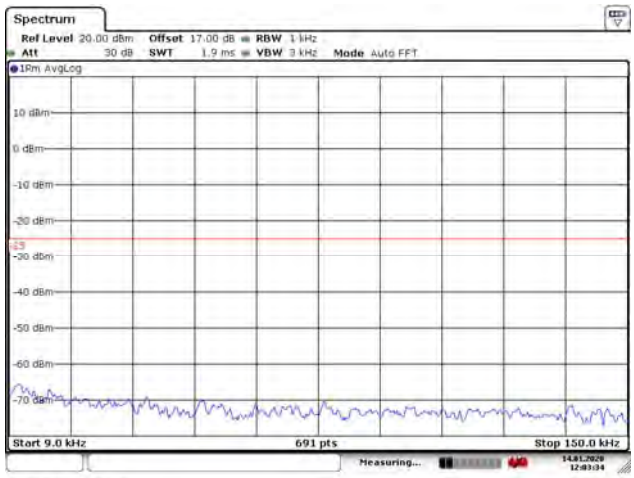
LTE Band 48 10MHz CH Middle 1GHz~40GHz



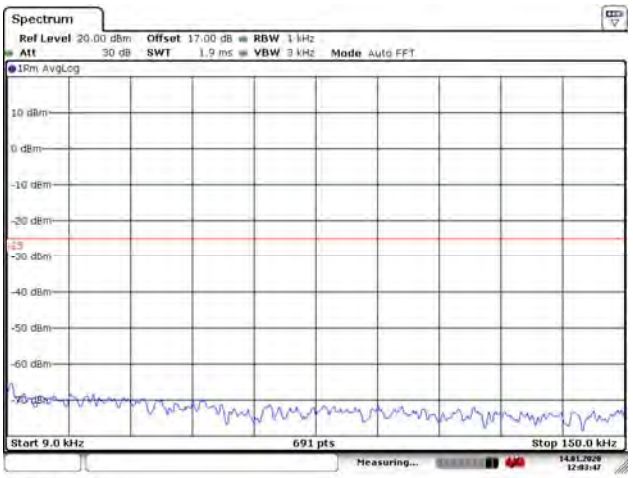
LTE Band 48 10MHz CH High 1GHz~40GHz



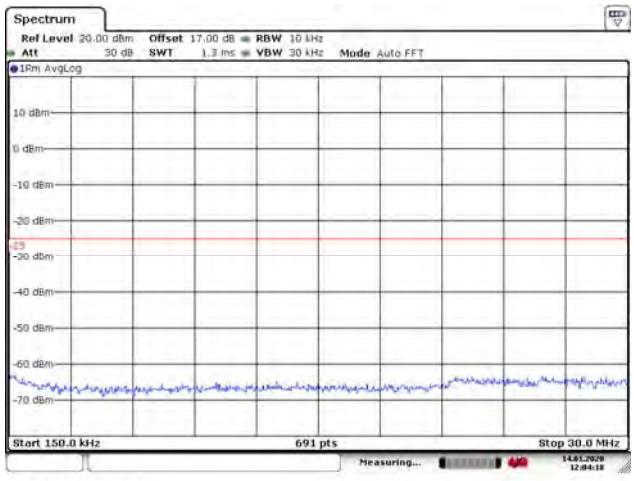
LTE Band 48 15MHz CH Low 9KHz~150KHz



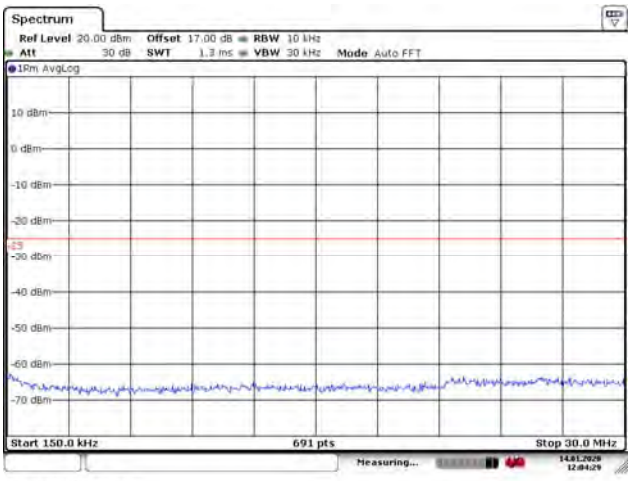
LTE Band 48 15MHz CH Middle 9KHz~150KHz



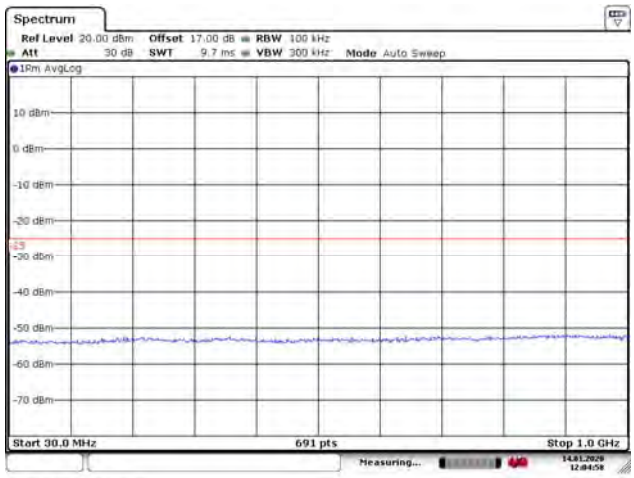
LTE Band 48 15MHz CH Low 150KHz~30MHz



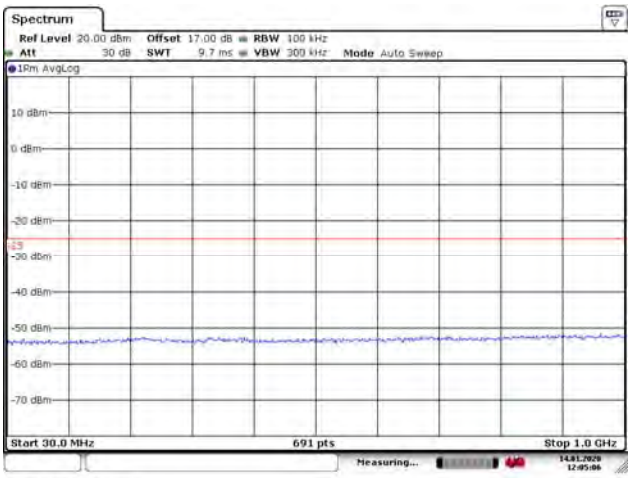
LTE Band 48 15MHz CH Middle 150KHz~30MHz



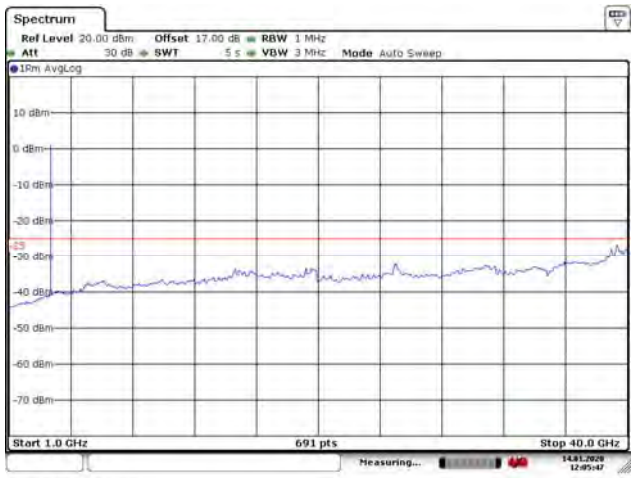
LTE Band 48 15MHz CH Low 30MHz~1GHz



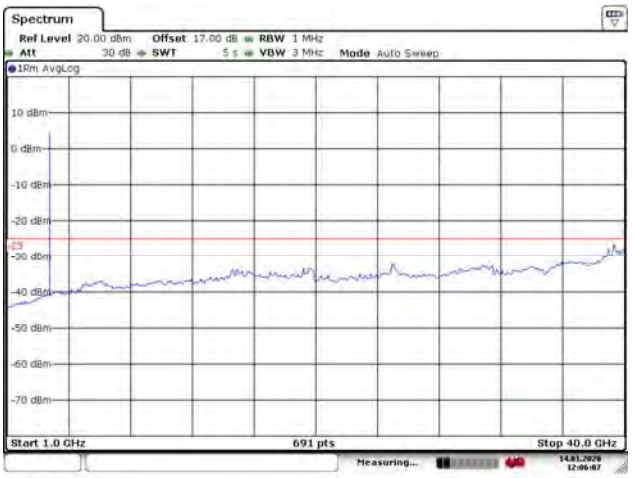
LTE Band 48 15MHz CH Middle 30MHz~1GHz



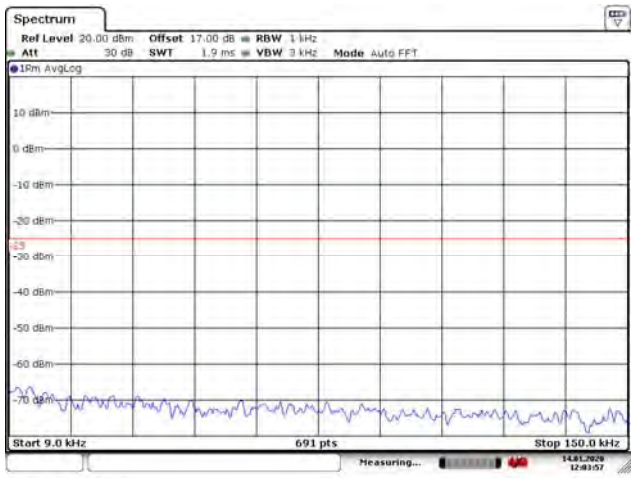
LTE Band 48 15MHz CH Low 1GHz~40GHz



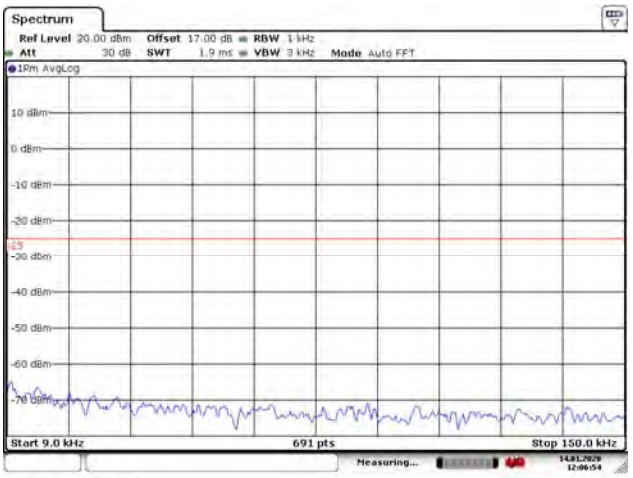
LTE Band 48 15MHz CH Middle 1GHz~40GHz



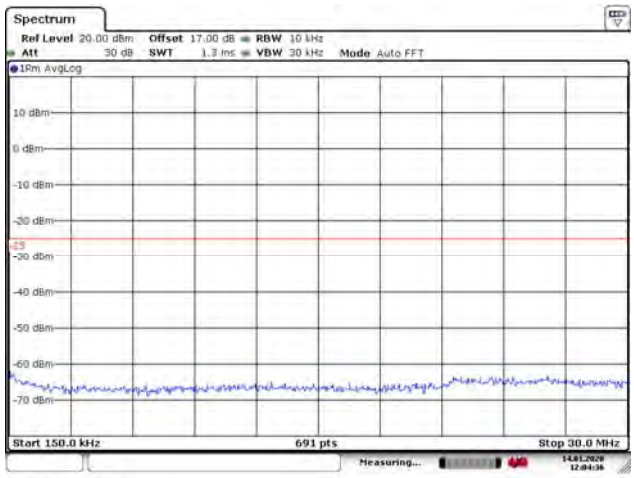
LTE Band 48 15MHz CH High 9KHz~150KHz



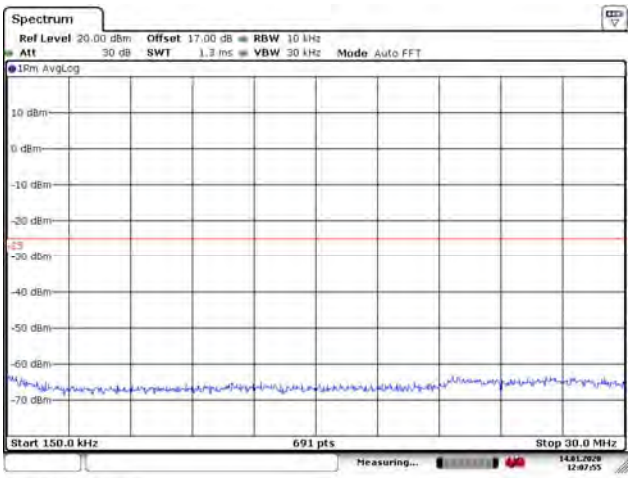
LTE Band 48 20MHz CH Low 9KHz~150KHz



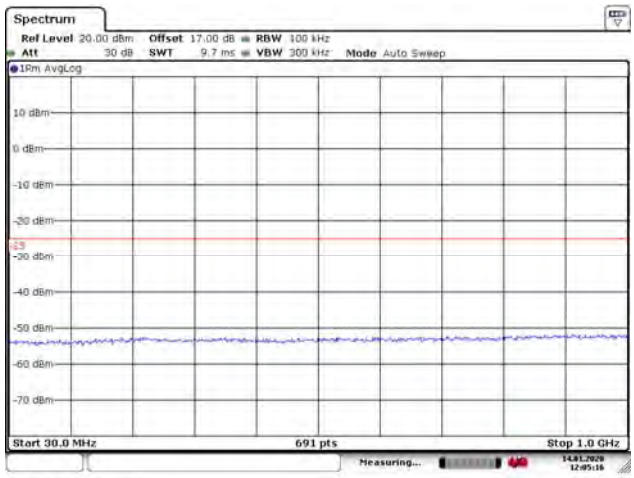
LTE Band 48 15MHz CH High 150KHz~30MHz



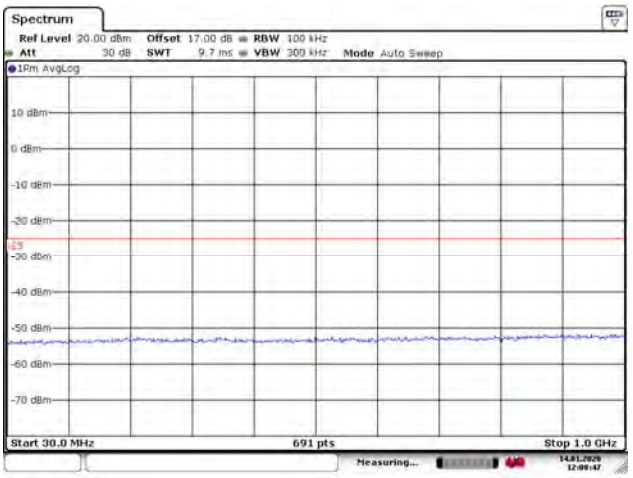
LTE Band 48 20MHz CH Low 150KHz~30MHz



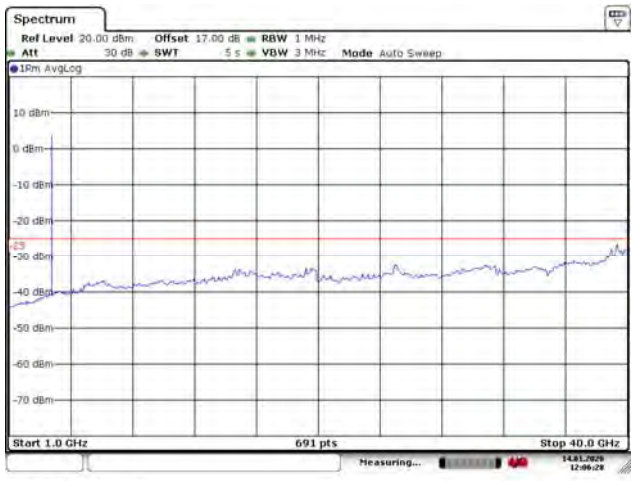
LTE Band 48 15MHz CH High 30MHz~1GHz



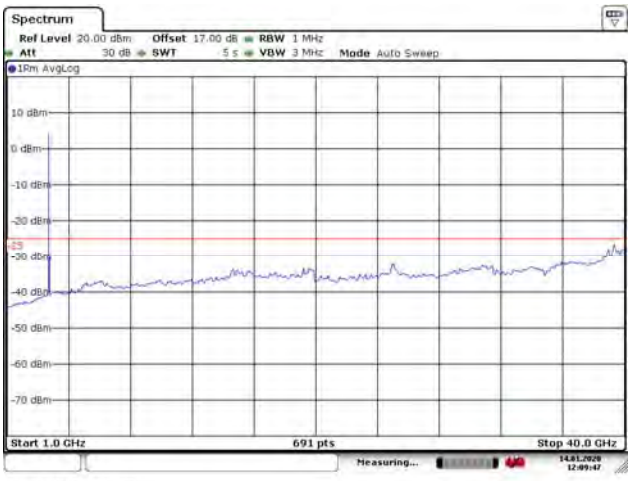
LTE Band 48 20MHz CH Low 30MHz~1GHz



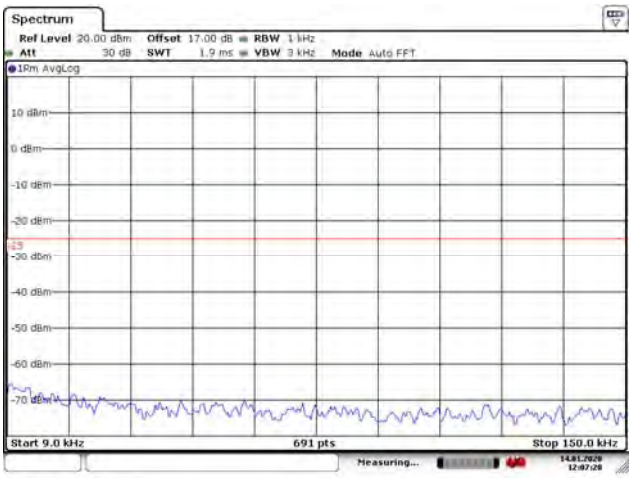
LTE Band 48 15MHz CH High 1GHz~40GHz



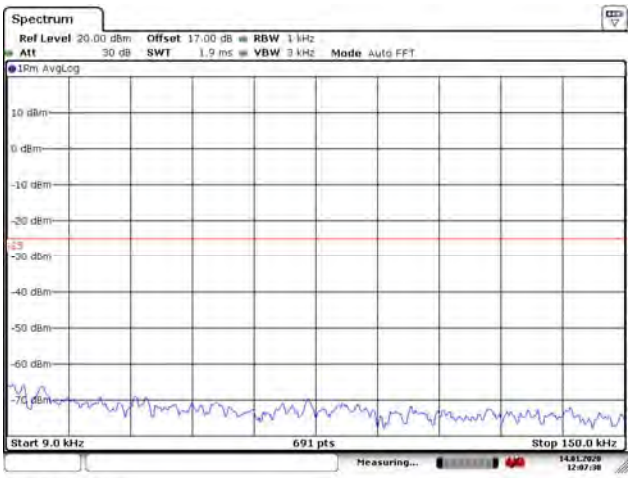
LTE Band 48 20MHz CH Low 1GHz~40GHz



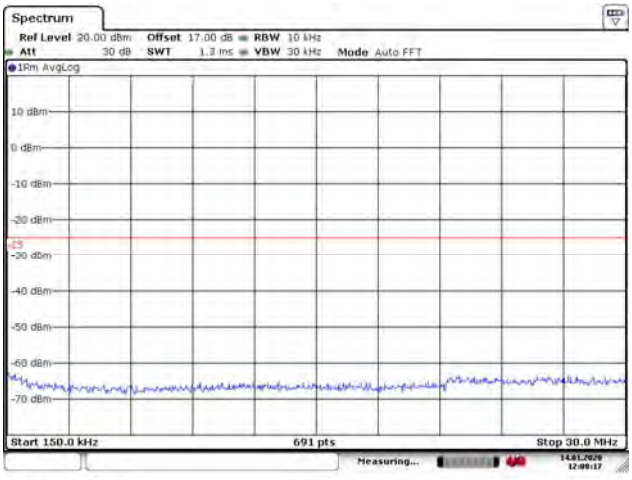
LTE Band 48 20MHz CH Middle 9KHz~150KHz



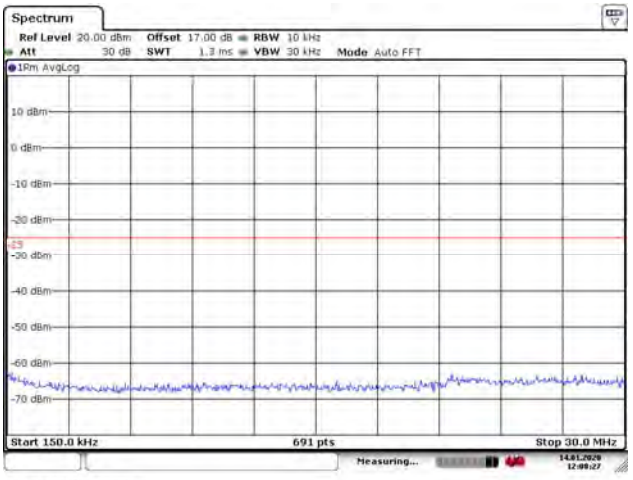
LTE Band 48 20MHz CH High 9KHz~150KHz



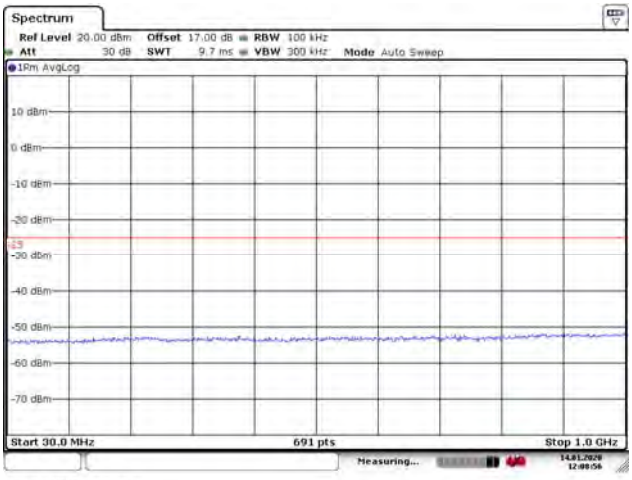
LTE Band 48 20MHz CH Middle 150KHz~30MHz



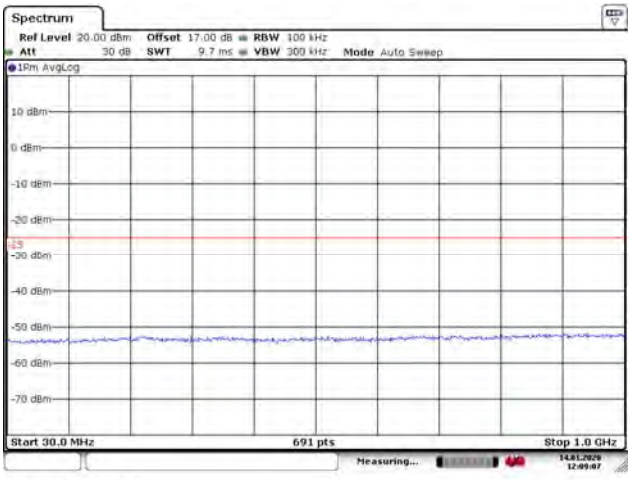
LTE Band 48 20MHz CH High 150KHz~30MHz

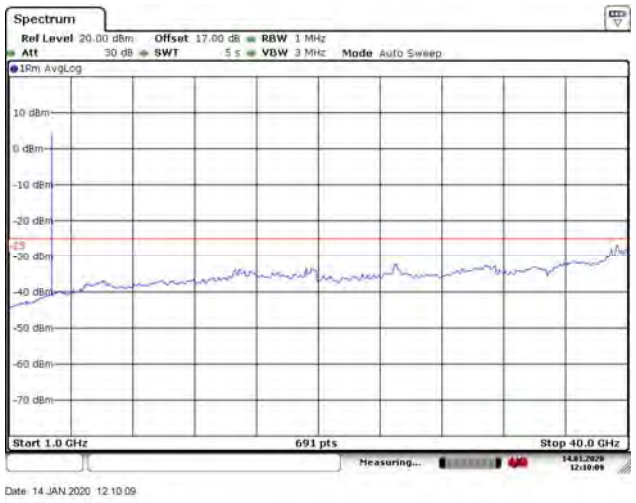
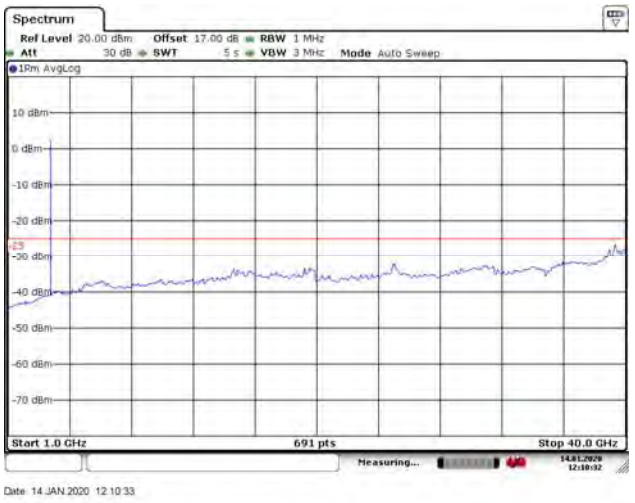


LTE Band 48 20MHz CH Middle 30MHz~1GHz



LTE Band 48 20MHz CH High 30MHz~1GHz



LTE Band 48 20MHz CH Middle 1GHz~40GHz	LTE Band 48 20MHz CH High 1GHz~40GHz
	

5.8. Field Strength of Spurious Radiation/ Radiated Spurious Emissions

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

Method of Measurement

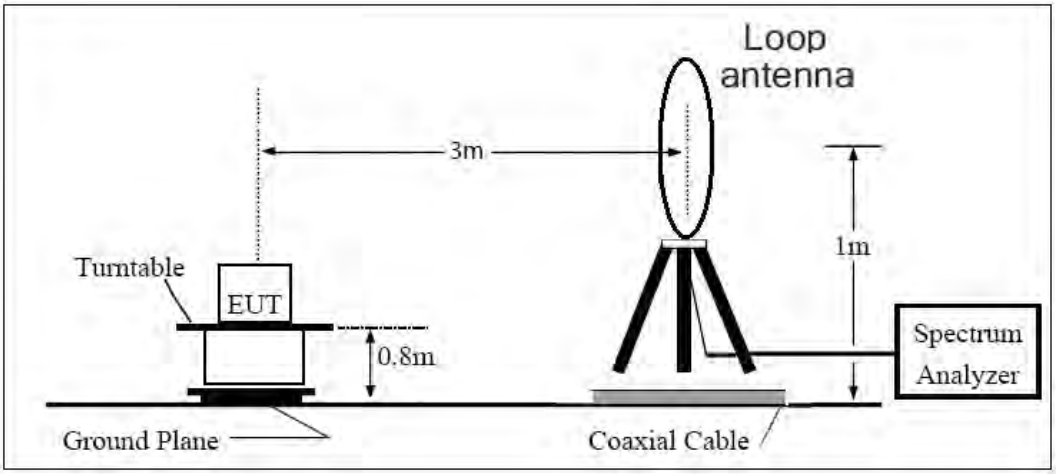
1. The testing follows FCC KDB 971168 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A loop antenna, A log-periodic antenna or 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.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=200Hz,VBW=600Hz for 9kHz150kHz , RBW=10kHz, VBW=30kHz 150kHz-30MHz , RBW=100kHz,VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz, And the maximum value of the receiver should be recorded as (Pr).
5. 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 (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. 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 (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi)

and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

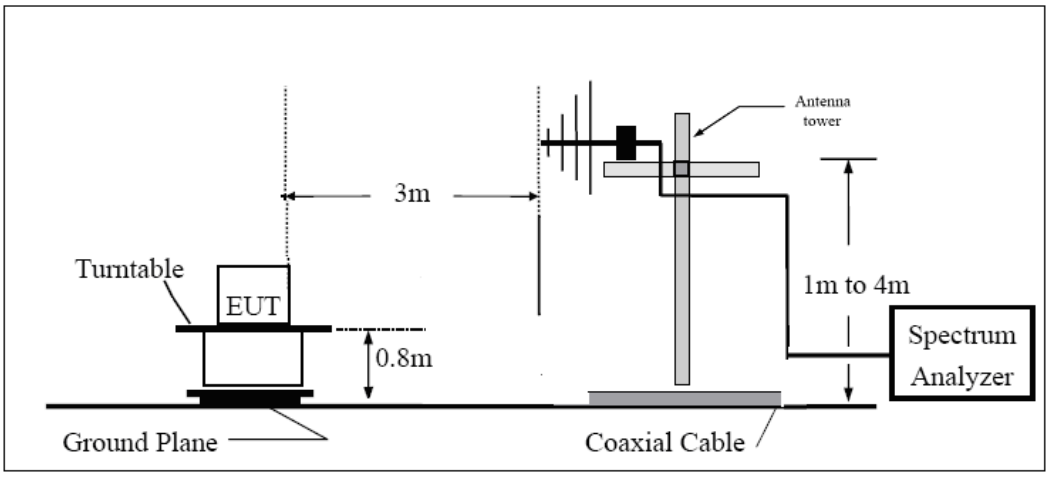
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

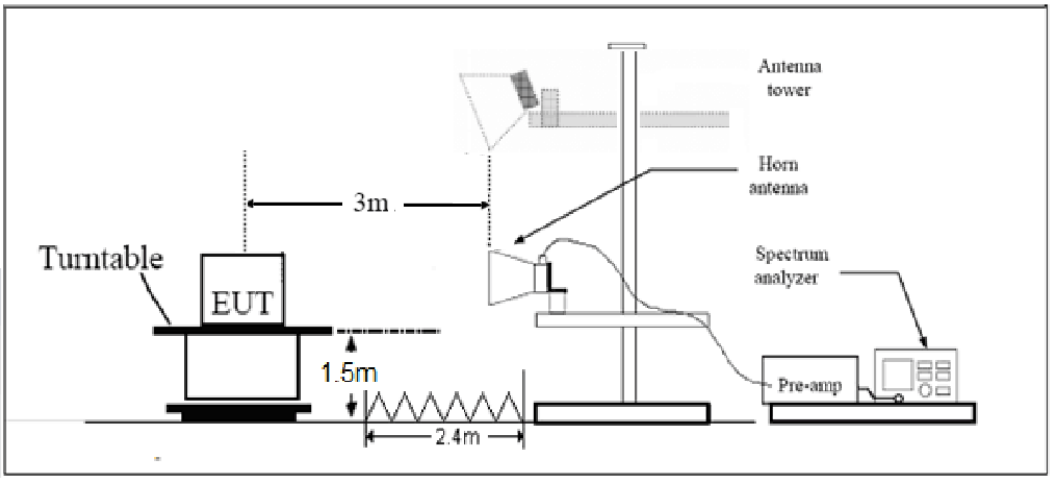
9KHz ~ 30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Limits

Rule Part 90.1323 specifies 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.”

Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95％ confidence level for thenormal distribution is with the coverage factor *k* = 1.96,*U*=3.55 dB.

Test Result

Sweep the whole frequency band through the range from 30MHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

LTE Band 43 5MHz CH Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7400.0	-50.31	2.50	11.35	horizontal	-41.46	-25.00	16.46	315.00
3	11100.0	-51.36	4.20	12.05	horizontal	-43.51	-25.00	18.51	45.00
4	14800.0	-46.34	5.50	14.23	horizontal	-37.61	-25.00	12.61	225.00
5	18500.0	--	--	--	--	--	--	--	--
6	22200.0	--	--	--	--	--	--	--	--
7	25900.0	--	--	--	--	--	--	--	--
8	29600.0	--	--	--	--	--	--	--	--
9	33300.0	--	--	--	--	--	--	--	--
10	37000.0	--	--	--	--	--	--	--	--
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 43 20MHz CH Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7400.0	-49.71	2.50	11.35	horizontal	-40.86	-25.00	15.86	45.00
3	11100.0	-39.33	4.20	12.05	horizontal	-31.48	-25.00	6.48	180.00
4	14800.0	-47.06	5.50	14.23	horizontal	-38.33	-25.00	13.33	90.00
5	18500.0	--	--	--	--	--	--	--	--
6	22200.0	--	--	--	--	--	--	--	--
7	25900.0	--	--	--	--	--	--	--	--
8	29600.0	--	--	--	--	--	--	--	--
9	33300.0	--	--	--	--	--	--	--	--
10	37000.0	--	--	--	--	--	--	--	--
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 48 5MHz CH Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7250.0	-48.28	2.50	11.35	horizontal	-39.43	-13.00	26.43	90.00
3	10875.0	-47.74	4.20	12.05	horizontal	-39.89	-13.00	26.89	0.00
4	14500.0	-44.50	5.50	14.23	horizontal	-35.77	-13.00	22.77	315.00
5	18125.0	--	--	--	--	--	--	--	--
6	21750.0	--	--	--	--	--	--	--	--
7	25375.0	--	--	--	--	--	--	--	--
8	29000.0	--	--	--	--	--	--	--	--
9	32625.0	--	--	--	--	--	--	--	--
10	36250.0	--	--	--	--	--	--	--	--
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 48 20MHz CH Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	7250.0	-49.74	2.50	11.35	horizontal	-40.89	-13.00	27.89	135.00
3	10875.0	-48.06	4.20	12.05	horizontal	-40.21	-13.00	27.21	315.00
4	14500.0	-45.47	5.50	14.23	horizontal	-36.74	-13.00	23.74	45.00
5	18125.0	--	--	--	--	--	--	--	--
6	21750.0	--	--	--	--	--	--	--	--
7	25375.0	--	--	--	--	--	--	--	--
8	29000.0	--	--	--	--	--	--	--	--
9	32625.0	--	--	--	--	--	--	--	--
10	36250.0	--	--	--	--	--	--	--	--
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2019-05-19	2020-05-18
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Agilent	N9010A	MY50210259	2019-05-19	2020-05-18
Signal Analyzer	R&S	FSV40	15195-01-00	2019-05-19	2020-05-18
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
Horn Antenna	STEATITE	QSH-SL-26-40-K-15	16779	2017-07-20	2020-07-19
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
RF Cable	Agilent	SMA 15cm	0001	2019-12-13	2020-06-12
Software	R&S	EMC32	9.26.0	/	/

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