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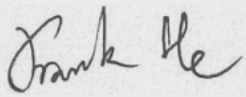
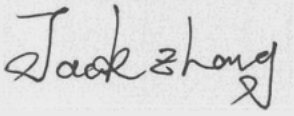
Test report No:
19C2189R-RF-US-P40V01

FCC TEST REPORT

Product Name	LTE CAT-M1 (eMTC) Module
Trademark	RhythmStar-W
FCC ID	2ACA9-10003
Model and /or type reference	SIM7000A
Applicant´s name / address	Rhythmedix, LLC 5000 Atrium Way Mt. Laurel New Jersey United States 08054
Test method requested, standard	FCC CFR Title 47 Part 24 & 27 ANSI C63.26: 2015 KDB971168 D01 v03r01, KDB971168 D02 v02r01 ANSI/TIA-603-E: 2016
Verdict Summary	IN COMPLIANCE
Documented By (name / position & signature)	Kitty Li/Project Assistant 
Tested by (name / position & signature)	Frank He/ Technical Supervisor 
Approved by (name / position & signature)	Jack Zhang/ Supervisor 
Date of issue	2020-04-15
Report template No	19C2189R-RF-US-P40V01

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COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.
In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Dec. 26, 2019
Date (start test)	Jan. 14, 2020
Date (finish test)	Apr. 10, 2020

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT : Equipment Under Test
QP : Quasi-Peak
CAV : CISPR Average
AV : Average
CDN : Coupling Decoupling Network
SAC : Semi-Anechoic Chamber
OATS : Open Area Test Site
BW : Bandwidth
AM : Amplitude Modulation
PM : Pulse Modulation
HCP : Horizontal Coupling Plane
VCP : Vertical Coupling Plane
U_N : Nominal voltage
*T*x : Transmitter
*R*x : Receiver
N/A : Not Applicable
N/M : Not Measured

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
19C2189R-RF-US-P40V01	V1.0	Initial issue of report.	2020-04-13
19C2189R-RF-US-P40V01	V1.1	Modified some information	2020-04-15

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with FCC Part ,24,27,.
3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result, unless the specification, standard or customer have special requirements.
4. The test results presented in this report relate only to the object tested.
5. The test results relate only to the samples tested.
6. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
7. This report will not be used for social proof function in China market.

USED EQUIPMENT

RF Output Power/Frequency Stability/Occupied Bandwidth/Spurious Emissions at antenna terminals/Spurious Emissons at antenna terminals at Block Edges / TR7

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.09.28	2020.09.27
Signal analyzer	R&S	FSV	104212	2019.12.28	2020.12.27
Wideband Radio Communication Tester	R&S	CMW 500	1201.0002K50-158243-jb	2019.08.30	2020.08.29
Directional Coupler	Midwest Microwave	CPL-5231-16-001	-	2019.08.31	2020.08.30
Dual Directional Coupler	Agilent	778D	20160	2019.09.28	2020.09.27
Temperature & Humidity Chamber	Gaoyu	TH-1P-B	WIT-05121302	2019.09.30	2020.09.29
Temperature/Humidity Meter	Zhichen	ZC1-2	TR7-TH	2019.08.21	2020.08.20

Radiated Emissions (1GHz-40GHz)/ AC5

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal analyzer	R&S	FSV	104212	2019.12.28	2020.12.27
Wideband Radio Communication Tester	R&S	CMW 500	1201.0002K50-158243-jb	2019.08.30	2020.08.29
ESG Vector Signal Generator	Agilent	E4438C	MY49070163	2019.09.30	2020.09.29
low Noise Amplifier	BXT	NA2651D	LNA17040209	2019.04.13	2020.04.12
Pre-Amplifier	Chengyi	EMC184045SE	980263	2019.06.13	2020.06.12
Half Wave Tuned Dipole Antenna	COM-POWER	AD-100	40137	2020.03.08	2021.03.07
Bilog Antenna	Schaffner	Schaffner	2932	2019.11.16	2020.11.15
DRG Horn	ETS-Lindgren	3117	00167055	2019.05.25	2020.05.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2020.03.23	2021.03.22
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2019.04.13	2020.04.12
Coaxial Cable	ROSENBERGER	LA1-C011-2000/3000	AC5-40G	2019.04.25	2020.04.24
Temperature/Humidity Meter	Riters	RTS-8S	AC5-TH	2019.09.02	2020.09.01
Dekra test software	Dekra	-	-	-	-

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.The Uncertainties is complice with standard required as below.

Test item	Uncertainty
RF Output Power	±1.2 dB
Frequency Stability	±10 Hz
Occupied Bandwidth	±10 Hz
Spurious Emissions at antenna terminals	±1.2 dB
Spurious Emissions at antenna terminals at Block Edges	±1.2 dB
Radiated Emissions	±3.2 dB

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Wireless Card ..... :	SIM7000A
Wireless specification ..... :	LTE CAT-M1(eMTC)
Support Band	Band 2 UL: 1850 ~ 1910MHz; DL: 1930 ~ 1990MHz; Band 4 UL: 1710 ~ 1755MHz; DL: 2110 ~ 2155MHz; Band 12 UL: 699 ~ 716MHz; DL: 729 ~ 746MHz; Band 13 UL: 777 ~ 787MHz; DL: 746 ~ 756MHz;
UL Modulation..... :	QPSK ,16QAM

Rated power supply ..... :	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☐	AC: 100 – 240 V, 50/60 Hz
	☐	DC: 12 V
	☒	Battery: 3.8V
	☐	PoE:
Mounting position..... :	☐	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☐	Hand-held equipment
	☒	Other: portable devices

Host information

Model / Type number ..... :	Wireless Event Monitor
Trademark ..... :	RhythmStar-W
Manufacturer..... :	Rhythmedix, LLC
Manufacturer Address..... :	5000 Atrium Way Mt. Laurel New Jersey United States 08054

Note: This product is used on product Wireless Event Monitor. It just changed the antenna.We have evaluated that it will not affect the rf performance on product Wireless Event Monitor, so we only carry out RF Output Power and Radiated Emission evaluation on Wireless Event Monitor hosts. Do based on Test Report No. I17D00095-RFA04.

1.2 Antenna Information

Antenna model / type number.....:	SR4L002			
Antenna Delivery .....:	☒	1TX + 1RX		
	☐	2TX + 2RX		
	☐	Others:……		
Antenna technology.....:	☒	SISO		
	☐	MIMO	☐	CDD
			☐	Beam-forming
Antenna Type.....:	☐	External	☐	Dipole
			☐	PIFA
			☐	Sectorized
	☒	Internal	☐	PIFA
			☐	PCB
			☒	SMD
			☐	Others……..
Antenna Gain.....:	Band 2 & Band 4: 2.5dBi Band 12 & Band 13: 0.5dBi			

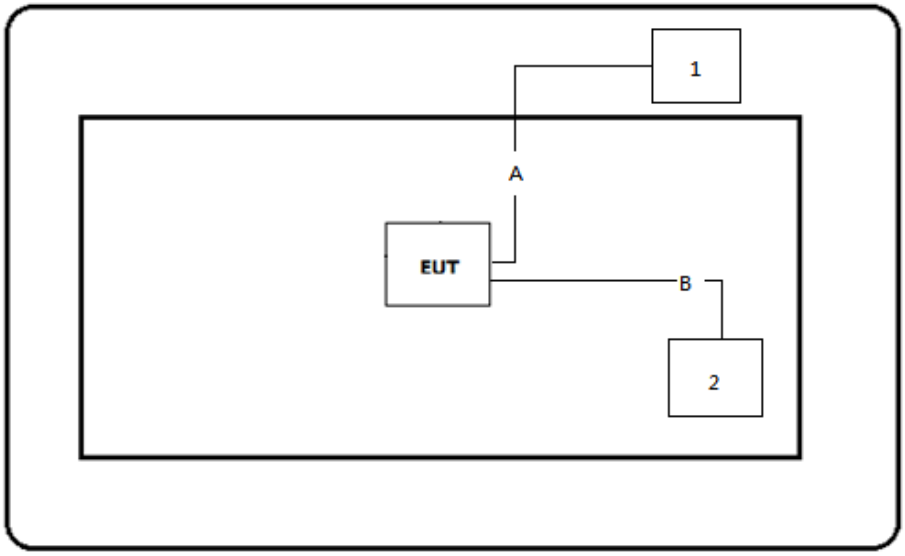
2 DESCRIPTION OF TEST SETUP

2.1 Auxiliary equipment / Test software for the EUT

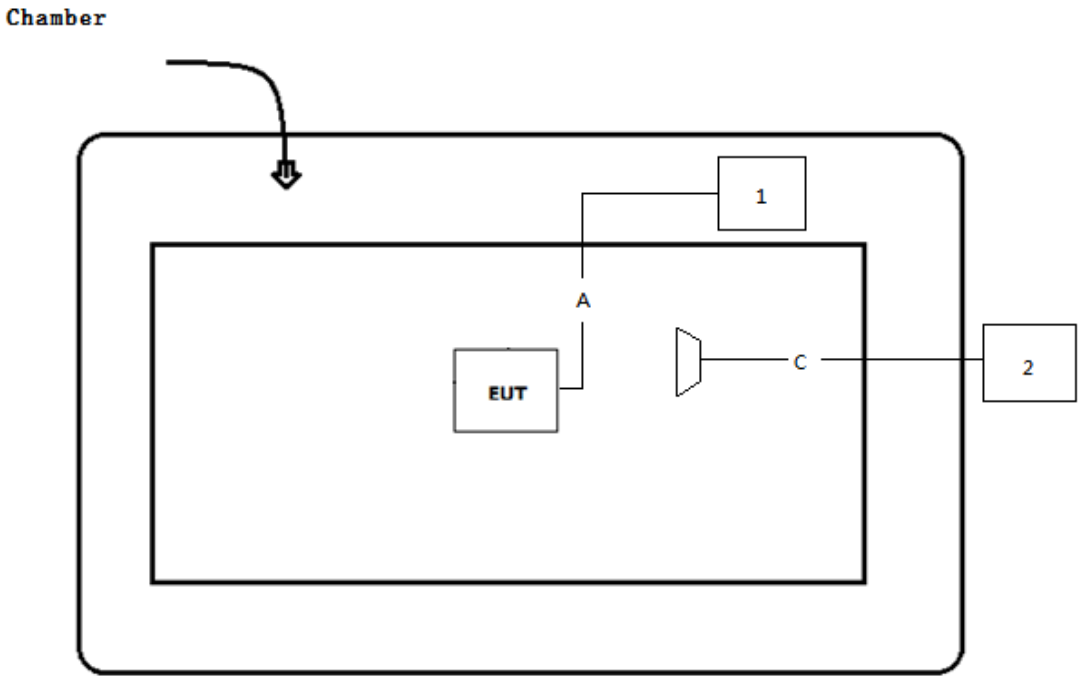
No.	Auxiliary equipment	Model No.	Manufacturer	Supplied by
1	Radio Communication Analyzer	MT8821C	Anritsu	N/A

2.2 Test Configuration / Block diagram used for tests

Conducted Connection Diagram



Radiated Connection Diagram



2.3 Testing process

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	EUT Communicate with MT8821C, then select channel to test.

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 2	2020	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS
FCC CFR Title 47 Part 24	2020	PERSONAL COMMUNICATIONS SERVICES
FCC CFR Title 47 Part 27	2020	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

(Please define the deviations from the standard(s) if applicable)

3.3 Overview of results

FCC Part 24			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
RF Output Power	Section 24.232/RSS-133 Section 6.4	PASS	
Radiated Emissions	Section 24.238/RSS-132 Section 6.5	PASS	

FCC Part 27			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
RF Output Power	Section 27.50/RSS-130 Section 4.4/RSS-139 Section 6.5	PASS	
Radiated Emissions	Section 27.53/RSS-130 Section 4.6/RSS-139 Section 6.6	PASS	

3.4 Test Facility

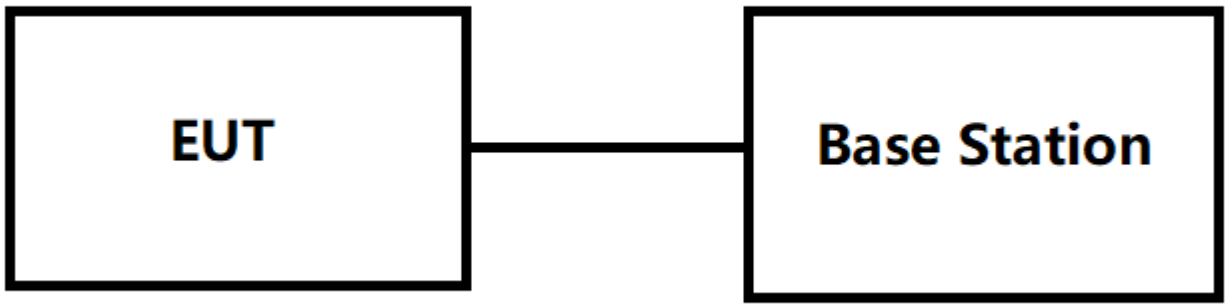
USA	**:**	**FCC Designation Number: CN1199**

4 TEST RESULTS

4.1 RF Output Power	VERDICT: PASS

4.1.1 Limit	
eMTC Band	**Standard**
2	FCC §2.1046 and §24.232: Mobile and portable stations are limited to 2 watts EIRP. The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
4	FCC §27.50(d)(4): Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.
12/13	FCC §27.50(c)(10): Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.
	FCC §27.50(b)(10): Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

4.1.2 Test Setup



4.1.3 Test Procedure

	References Rule	Chapter	Item
☒	ANSI C63.26-2015	5.2	RF output power measurement procedures

The conducted RF Output Power measurements were made at the RF output terminals of the EUT using the power meter of the Universal Radio Communication tester R&S CMW500, selecting maximum transmission power of the EUT and different modes of modulation.
Peak to average ratio(PAPR) is used equation PAPR(dB)=PPK(dBm)-PAVG(dBm), where PPK is measured peak power, and PAVG is measured average power.
The maximum equivalent isotropically radiated power(e.i.r.p.) is calculated by adding the declared maximum antenna gain(dBi).
The maximum effective radiated power e.r.p. is calculated form the maximum equivalent isotropically radiated power(e.i.r.p.) by subtracting 2.15 dB: E.R.P = E.I.R.P. – 2.15 dB

4.1.4 Test Data

Test Item	Maximum Output Power		
Test Mode	LTE Band 2 Link		
Date of Test	2020/01/16	Test Site	TR7
Antenna gain	2.5 dBi		

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				18607	18900	19193
Frequency				1850.7	1880	1909.3
1.4	1	0	QPSK	25.07	24.90	24.87
1.4	1	2		24.86	25.00	24.54
1.4	1	5		24.79	24.74	24.66
1.4	3	0		24.07	23.64	23.34
1.4	3	1		23.97	23.67	23.27
1.4	3	2		24.04	23.70	23.24
1.4	6	0		22.96	22.71	22.20
1.4	1	0	16QAM	24.35	24.23	23.64
1.4	1	2		24.81	24.35	23.91
1.4	1	5		24.57	24.13	23.70
1.4	3	0		23.38	22.98	22.77
1.4	3	1		23.42	23.00	22.74
1.4	3	2		23.43	23.07	22.66
1.4	6	0		22.42	22.05	21.63

BW [MHz]	RB Size	RB Offset	Mod	EIRP[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				18607	18900	19193
Frequency				1850.7	1880	1909.3
1.4	1	0	QPSK	27.57	27.40	27.37
1.4	1	2		27.36	27.50	27.04
1.4	1	5		27.29	27.24	27.16
1.4	3	0		26.57	26.14	25.84
1.4	3	1		26.47	26.17	25.77
1.4	3	2		26.54	26.20	25.74
1.4	6	0		25.46	25.21	24.70
1.4	1	0	16QAM	26.85	26.73	26.14
1.4	1	2		27.31	26.85	26.41

1.4	1	5		27.07	26.63	26.20
1.4	3	0		25.88	25.48	25.27
1.4	3	1		25.92	25.50	25.24
1.4	3	2		25.93	25.57	25.16
1.4	6	0		24.92	24.55	24.13

Test Item	Maximum Output Power		
Test Mode	LTE Band 4 Link		
Date of Test	2020/01/16	Test Site	TR7
Antenna gain	2.5 dBi		

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				19957	20175	20393
Frequency				1710.7	1732.5	1754.3
1.4	1	0	QPSK	24.90	24.85	24.86
1.4	1	2		24.81	24.80	24.73
1.4	1	5		24.80	24.77	24.84
1.4	3	0		24.25	24.26	24.29
1.4	3	1		23.87	23.68	23.74
1.4	3	2		23.85	23.67	23.82
1.4	6	0		22.80	22.67	22.89
1.4	1	0	16QAM	24.30	24.23	24.22
1.4	1	2		24.27	24.16	24.14
1.4	1	5		23.33	23.05	23.90
1.4	3	0		23.14	23.05	22.87
1.4	3	1		23.16	22.97	22.65
1.4	3	2		23.21	23.06	22.74
1.4	6	0		22.13	22.10	21.88

BW [MHz]	RB Size	RB Offset	Mod	EIRP[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				19957	20175	20393
Frequency				1710.7	1732.5	1754.3
1.4	1	0	QPSK	27.40	27.35	27.36
1.4	1	2		27.31	27.30	27.23
1.4	1	5		27.30	27.27	27.34
1.4	3	0		26.75	26.76	26.79
1.4	3	1		26.37	26.18	26.24
1.4	3	2		26.35	26.17	26.32
1.4	6	0		25.30	25.17	25.39
1.4	1	0	16QAM	26.80	26.73	26.72
1.4	1	2		26.77	26.66	26.64
1.4	1	5		25.83	25.55	26.40
1.4	3	0		25.64	25.55	25.37
1.4	3	1		25.66	25.47	25.15

1.4	3	2		25.71	25.56	25.24
1.4	6	0		24.63	24.60	24.38

Test Item	Maximum Output Power		
Test Mode	LTE Band 12 Link		
Date of Test	2020/01/16	Test Site	TR7
Antenna gain	0.5 dBi		

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				23017	23095	23173
Frequency				699.7	707.5	715.3
1.4	1	0	QPSK	25.26	25.23	25.11
1.4	1	2		25.07	25.08	25.05
1.4	1	5		25.09	24.95	25.11
1.4	3	0		24.00	24.10	24.07
1.4	3	1		23.93	23.97	23.94
1.4	3	2		23.93	24.01	23.91
1.4	6	0		22.85	22.97	22.79
1.4	1	0	16QAM	24.52	24.71	24.49
1.4	1	2		24.09	24.24	24.11
1.4	1	5		24.36	24.66	24.46
1.4	3	0		23.38	23.54	24.51
1.4	3	1		23.39	23.39	23.26
1.4	3	2		23.23	23.40	23.26
1.4	6	0		22.11	22.43	22.16

BW [MHz]	RB Size	RB Offset	Mod	ERP[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				23017	23095	23173
Frequency				699.7	707.5	715.3
1.4	1	0	QPSK	25.76	25.73	25.61
1.4	1	2		25.57	25.58	25.55
1.4	1	5		25.59	25.45	25.61
1.4	3	0		24.50	24.60	24.57
1.4	3	1		24.43	24.47	24.44
1.4	3	2		24.43	24.51	24.41
1.4	6	0		23.35	23.47	23.29
1.4	1	0	16QAM	25.02	25.21	24.99
1.4	1	2		24.59	24.74	24.61
1.4	1	5		24.86	25.16	24.96
1.4	3	0		23.88	24.04	25.01
1.4	3	1		23.89	23.89	23.76

1.4	3	2		23.73	23.90	23.76
1.4	6	0		22.61	22.93	22.66

Test Item	Maximum Output Power		
Test Mode	LTE Band 13 Link		
Date of Test	2020/01/16	Test Site	TR7
Antenna gain	0.5 dBi		

BW [MHz]	RB Size	RB Offset	Mod	MaximumAveragePower[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				23205	23230	23255
Frequency				779.5	782	784.5
1.4	1	0	QPSK	25.22	25.26	25.23
1.4	1	2		24.79	24.94	24.86
1.4	1	5		24.63	24.91	24.60
1.4	3	0		24.59	24.59	24.57
1.4	3	1		24.50	24.54	24.51
1.4	3	2		24.48	24.52	24.50
1.4	6	0		23.60	23.60	23.67
1.4	1	0	16QAM	24.66	24.73	24.49
1.4	1	2		24.15	24.38	24.14
1.4	1	5		23.89	24.20	23.87
1.4	3	0		23.95	23.97	23.90
1.4	3	1		23.87	23.89	23.80
1.4	3	2		23.97	23.78	23.82
1.4	6	0		22.86	23.02	23.09

BW [MHz]	RB Size	RB Offset	Mod	ERP[dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				23205	23230	23255
Frequency				779.5	782	784.5
1.4	1	0	QPSK	25.72	25.76	25.73
1.4	1	2		25.29	25.44	25.36
1.4	1	5		25.13	25.41	25.10
1.4	3	0		25.09	25.09	25.07
1.4	3	1		25.00	25.04	25.01
1.4	3	2		24.98	25.02	25.00
1.4	6	0		24.10	24.10	24.17
1.4	1	0	16QAM	25.16	25.23	24.99
1.4	1	2		24.65	24.88	24.64
1.4	1	5		24.39	24.70	24.37
1.4	3	0		24.45	24.47	24.40

1.4	3	1		24.37	24.39	24.30
1.4	3	2		24.47	24.28	24.32
1.4	6	0		23.36	23.52	23.59

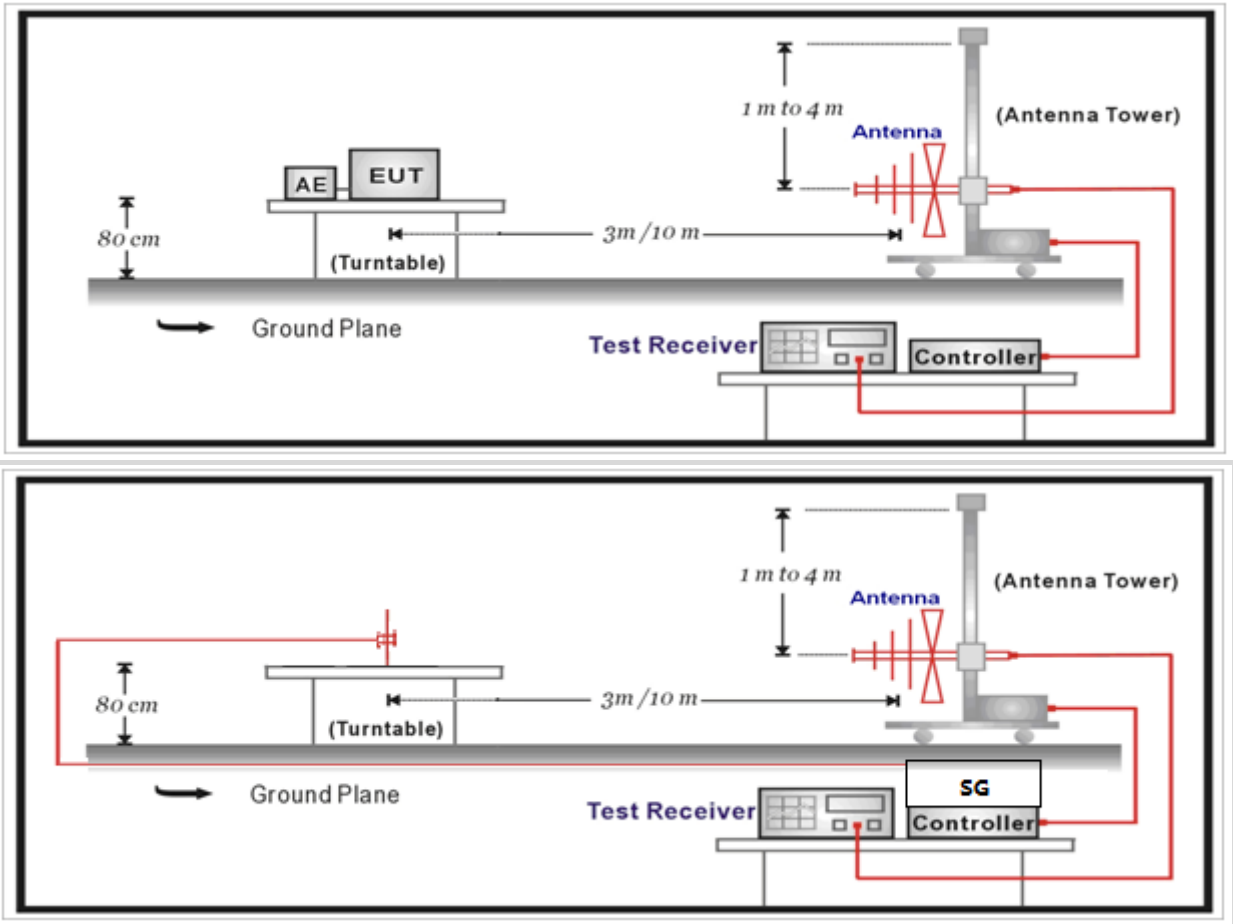
4.2 Radiated Emissions	VERDICT: PASS

4.2.1 Limit

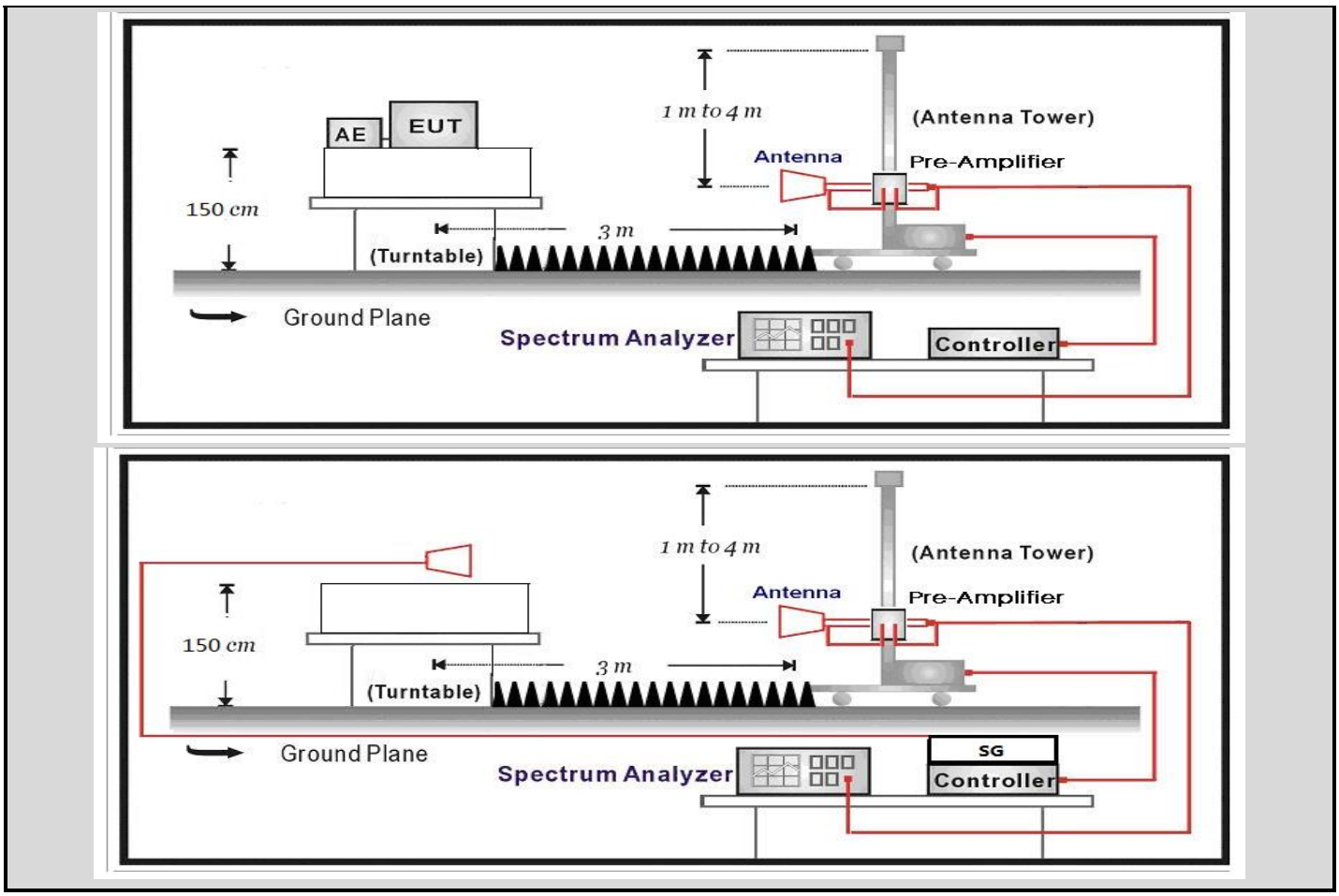
eMTC Band	Standard
2	FCC §2.1046 and §24.232: Mobile and portable stations are limited to 2 watts EIRP. The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
4	FCC §27.50(d)(4): Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.
12/13	FCC §27.50(c)(10): Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.
	FCC §27.50(b)(10): Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

4.2.2 Test Setup

30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.2.3 Test Procedure

	Reference Rule	Chapter	Description
☒	ANSI C63.26	5.5	Radiated emissions testing

The spectrum was scanned from 9 kHz to the 10th harmonic of the highest frequency generated within the equipment. Emissions below 18 GHz were measured at a 3 meter test distance.
The EUT was tested in three orthogonal axes and in all possible test configurations and poisoning when measurement antenna is orented n both horizontal and vertical polarization, the worst case emissions was showed in the report.
Radiated emissions were used the substitution method descried in ANSI/TIA-603-E-2016.
Radiated emissions were measured with 100kHz RBW below 1GHz and 1MHz RBW above 1GHz.
According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least X + 10 log (P) dB. P in watts. The specification can be interpreted as an absolute limit when the specified attenuation is actually subtracted from the maximum permissible transmitter power [i.e., 10 log P – {X + 10 log P}], resulting in an absolute level of -X dBW [or (-X + 30) dBm].

4.2.4 Test Data

NBIoT Band 2

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3701.400	H	-67.651	-13	-54.651
5552.100	H	-62.850	-13	-49.850
3701.400	V	-66.794	-13	-53.794
5552.100	V	-63.291	-13	-50.291
Middle channel				
3760.000	H	-69.357	-13	-56.357
5640.000	H	-62.450	-13	-49.450
3760.0	V	-68.507	-13	-55.507
5640.0	V	-64.573	-13	-51.573
Highest channel				
3818.600	H	-68.430	-13	-55.430
5727.900	H	-63.560	-13	-50.560
3818.600	V	-69.022	-13	-56.022
5727.900	V	-65.148	-13	-52.148

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NBIoT Band 4

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3421.400	H	-65.279	-13	-52.279
5132.100	H	-68.526	-13	-55.526
3421.400	V	-65.486	-13	-52.486
5132.100	V	-67.902	-13	-54.902
Middle channel				
3465.000	H	-65.845	-13	-52.845
5197.500	H	-68.248	-13	-55.248
3465.000	V	-65.809	-13	-52.809
5197.500	V	-68.897	-13	-55.897
Highest channel				
3508.600	H	-66.597	-13	-53.597
5262.900	H	-68.855	-13	-55.855
3508.600	V	-66.253	-13	-53.253
5262.900	V	-68.094	-13	-55.094

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NBIoT Band 12

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1399.400	H	-70.964	-13	-57.964
2099.100	H	-65.749	-13	-52.749
1399.400	V	-69.901	-13	-56.901
2099.100	V	-66.487	-13	-53.487
Middle channel				
1415.0	H	-71.515	-13	-58.515
2122.5	H	-66.750	-13	-53.750
1415.0	V	-71.612	-13	-58.612
2122.5	V	-66.069	-13	-53.069
Highest channel				
1430.600	H	-71.916	-13	-58.916
2145.900	H	-67.970	-13	-54.970
1430.600	V	-71.902	-13	-58.902
2145.900	V	-67.160	-13	-54.160

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

NBIoT Band 13

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1559.000	H	-70.421	-13	-57.421
2338.500	H	-67.078	-13	-54.078
1559.000	V	-70.335	-13	-57.335
2338.500	V	-66.600	-13	-53.600
Middle channel				
1564.000	H	-71.032	-13	-58.032
2346.000	H	-66.622	-13	-53.622
1564.000	V	-71.616	-13	-58.616
2346.000	V	-65.524	-13	-52.524
Highest channel				
1569.000	H	-70.270	-13	-57.270
2353.500	H	-66.301	-13	-53.301
1569.000	V	-72.123	-13	-59.123
2353.500	V	-67.237	-13	-54.237

Note: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi)

4.3 Test setup photo and EUT Photo	VERDICT: PASS

Remark: The test setup photo and EUT Photo please see appendix.

The End