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Test Report

Report No.:	MTi230302021-04E4
Date of issue:	2023-06-21
Applicant:	Guangzhou Shangke Information Technology Co., Ltd
Product:	Tablet PC
Model(s):	TLA002, TLA001, TLA003, TLA005, TLA006, TLA007, TLA008, TLA009, TLA010, TLA011, TLA012, TLA013, TLA015, TLA016, TLA017, TLA018, TLA019, TLA020, TLA021, TLA022, TLA023, TLA025, TLA026, TLA027, TLA028, TLA029, TLA030, TLC005, TLC006, TLC007, TLC008, TLC009, TLC010, TLC011, TLC012, TLC013, TLC014, TLC015, TLC016, TA10
FCC ID:	2ACGT-TLA002

Shenzhen Microtest Co., Ltd.

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Instructions

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2. The test results in this test report are only responsible for the samples submitted

3. This test report is invalid without the seal and signature of the laboratory.

4. This test report is invalid if transferred, altered, or tampered with in any form without authorization.

5. Any objection to this test report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

Contents

Test Result Certification	
Applicant:	**Guangzhou Shangke Information Technology Co., Ltd**
Address:	Room 1205-1212, R&F To-Win Building, No.30 Huaxia Road, Tianhe District, Guangzhou, Guangdong Province, China
Manufacturer:	**Guangzhou Shangke Information Technology Co., Ltd**
Address:	Room 1205-1212, R&F To-Win Building, No.30 Huaxia Road, Tianhe District, Guangzhou, Guangdong Province, China
Factory:	**Guangzhou Shangke Information Technology Co., Ltd**
Address:	Room 1205-1212, R&F To-Win Building, No.30 Huaxia Road, Tianhe District, Guangzhou, Guangdong Province, China
Product description	
Product name:	Tablet PC
Trademark:	TECLAST
Model name:	TLA002
Series Model:	TLA001, TLA003, TLA005, TLA006, TLA007, TLA008, TLA009, TLA010, TLA011, TLA012, TLA013, TLA015, TLA016, TLA017, TLA018, TLA019, TLA020, TLA021, TLA022, TLA023, TLA025, TLA026, TLA027, TLA028, TLA029, TLA030, TLC005, TLC006, TLC007, TLC008, TLC009, TLC010, TLC011, TLC012, TLC013, TLC014, TLC015, TLC016, TA10
Standards:	FCC CFR 47 Part 22H
Test method:	ANSI C63.26:2015 ANSI/TIA-603-E-2016 KDB 971168 D01 Power Meas License Digital Systems v03r01
Date of Test	
Date of test:	2023-04-20 ~ 2023-05-23
Test result:	Pass

Test Engineer : Yanice Xie

(Yanice Xie)

Reviewed By: : Leon Chen

(Leon Chen)

Approved By: : Tom Xue

(Tom Xue)

1 General Description

1.1 Description of the EUT

Product name:	Tablet PC
Model name:	TLA002
Series Model:	TLA001, TLA003, TLA005, TLA006, TLA007, TLA008, TLA009, TLA010, TLA011, TLA012, TLA013, TLA015, TLA016, TLA017, TLA018, TLA019, TLA020, TLA021, TLA022, TLA023, TLA025, TLA026, TLA027, TLA028, TLA029, TLA030, TLC005, TLC006, TLC007, TLC008, TLC009, TLC010, TLC011, TLC012, TLC013, TLC014, TLC015, TLC016, TA10
Model difference:	All the models are the same circuit and module, except the model name.
Electrical rating:	Input: DC 5V/2A Battery: DC 3.8V 7000mAh 26.6Wh
Hardware version:	TL-SEP30A-B-V1.0
Software version:	V1.04_20230318
Accessories:	1. Adapter: Model: XY-PD020U03 Input: 100-240V~ 50/60Hz 0.6A Max Output: 5V⎓3A, 9V⎓2.22A, 12V⎓1.67A 20W Max 2. Cable: USB-C to USB-C cable 1m
Test sample(s) number:	MTi230302021-04S1001
RF specification:	
Operation frequency:	GSM850: TX:824.2MHz~848.8MHz /RX:869.2MHz~893.8MHz GPRS850: TX:824.2MHz~848.8MHz /RX:869.2MHz~893.8MHz EGPRS850: TX:824.2MHz~848.8MHz /RX:869.2MHz~893.8MHz WCDMA Band 5: TX:826.4MHz~846.6MHz /RX:871.4MHz~891.6MHz LTE FDD Band 5: 824.7 – 848.3MHz
Modulation type:	GMSK for GSM/GPRS; 8PSK for EGPRS; QPSK for WCDMA bands; QPSK,16QAM for LTE bands;
Antenna designation:	Antenna type: PIFA antenna Antenna Gain: GSM850 Gain: -1.83 dBi GPRS850 Gain: -1.83 dBi EGPRS850 Gain: -1.83 dBi WCDMA Band 5 Gain: -1.83 dBi LTE FDD Band 5 Gain: -1.83 dBi
Max. peak conducted output power:	GSM850: 32.41 dBm GPRS850: 32.08 dBm EGPRS850: 25.72 dBm WCDMA Band 5: 22.76 dBm LTE FDD Band 5: 23.55 dBm

1.2 Description of test modes

1.2.1 Operation channel list

Frequency Band	Channel	Channel No.	Frequency (MHz)
GSM 850	Low	128	824.2
	Middle	190	836.6
	High	251	848.8
GPRS850	Low	128	824.2
	Middle	190	836.6
	High	251	848.8
EGPRS850	Low	128	824.2
	Middle	190	836.6
	High	251	848.8

Frequency Band	Channel	Channel No.	Frequency (MHz)
WCDMA Band V	Low	4132	826.4
	Middle	4183	836.6
	High	4233	846.6

Frequency Band	Channel	Channel Bandwidth (MHz)	Channel No.	Frequency (MHz)
LTE Band 5	Low	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829
	Middle	1.4/3/5/10	20525	836.5
	High	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844

1.2.2 EUT operation mode

GSM 850	During testing, RF test program provided by the manufacture to control the Tx operation followed the test requirement. The EUT is configured to transmit continuously (duty cycle > 98 %) at the maximum power control level.

WCDMA Band V	During testing, RF test program provided by the manufacture to control the Tx operation followed the test requirement. The EUT is configured to transmit continuously (duty cycle > 98 %) at the maximum power control level.

LTE band 5	Keep the EUT in data communicating mode on LTE band5. (LTE band5(1.4MHz), LTE band5(3MHz), LTE band5(5MHz), LTE band5(10MHz)
Note: Only the worst case data were shown in the report.	

1.2.3 Description of support units

Support equipment list			
Description	Model	Serial No.	Manufacturer
/	/	/	/

1.3 Measurement uncertainty

Parameter	Measurement uncertainty
Occupied Bandwidth	±3 %
Conducted RF output power	±0.16 dB
Conducted spurious emissions	±0.21 dB
Radiated emission (9 kHz ~ 30 MHz)	±4.0 dB
Radiated emission (30 MHz~1 GHz)	±4.2 dB
Radiated emission (above 1 GHz)	±4.3 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2 Summary of Test Result

No.	FCC reference	Description of test	Result
1	part2.1046 Part 22.913(a)(2) Part 24.232(c) Part 27.50 (c)(10) Part 27.50 (d)(4) Part 27.50 (h)(2)	RF Output Power	Pass
2	Part 22.913(a) Part 24.232(c) Part 27.50(h)(2) Part 27.50(b)(10) Part 27.50(c)(10) Part 27.50(d)(4) Part 27.50(a)(3)	Radiated Power (ERP/EIRP)	Pass
3	Part 22.913(a) Part 24.232(c) Part 27.50(d)(5)	Peak-to-Average Ratio	Pass
4	Part 2.1049 Part 22.917(b) Part 24.238(b) Part 27.53(g) Part 27.53(h) Part 27.53(m)	99% and -26 dB Occupied Bandwidth	Pass
5	part 2.1051 part 22.917(a); part 24.238(a) part 27.53 (g)(h)	Spurious emissions at antenna terminals	Pass
6	part 2.1051 part 22.917(b); part 24.238(b) part 27.53(c)(2)(4) part 27.53(g) part 27.53(h)	Band edge at antenna terminals	Pass
7	Part 2.1053 Part 22.917(a) Part 24.238(a) Part 27.53 (g) Part 27.53 (h) Part 27.53(m)	Field strength of spurious radiation measurement	Pass
8	Part 22.355 Part 24.235 Part 27.54 Part 2.1055(a)(1)(b) Part 2.1055(d)(2)	Frequency Stability for Temperature &Voltage	Pass

Note: N/A means not applicable.

3 Test Facilities and Accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573

4 Equipment List

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTi-E043	EMI test receiver	R&S	ESCI7	101166	2023/04/26	2024/04/25
MTi-E043	EMI test receiver	R&S	ESCI7	101166	2022/05/05	2023/05/04
MTi-E023	Artificial mains network	Schwarzbeck	NSLK8127	183	2023/05/04	2024/05/03
MTi-E023	Artificial mains network	Schwarzbeck	NSLK8127	183	2022/05/05	2023/05/04
MTi-E044	Broadband antenna	Schwarzbeck	VULB9163	9163-1338	2021/05/30	2024/05/29
MTi-E047	Pre-amplifier	Hewlett-Packard	8447F	3113A06184	2023/04/26	2024/04/25
MTi-E047	Pre-amplifier	Hewlett-Packard	8447F	3113A06184	2022/05/05	2023/05/04
MTi-E046	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00044	2021/05/30	2024/05/29
MTi-E089	ESG Vector Signal Generator	Agilent	N5182A	MY49060455	2023/04/25	2024/04/24
MTi-E089	ESG Vector Signal Generator	Agilent	N5182A	MY49060455	2022/05/05	2023/05/04
MTi-E045	Horn antenna	Schwarzbeck	BBHA9120D	2278	2021/05/30	2024/05/29
MTi-E048	Pre-amplifier	Agilent	8449B	3008A01120	2023/05/04	2024/05/03
MTi-E048	Pre-amplifier	Agilent	8449B	3008A01120	2022/05/05	2023/05/04
MTi-E062	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2023/04/25	2024/04/24
MTi-E062	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2022/05/05	2023/05/04
MTi-E058	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2023/04/25	2024/04/24
MTi-E058	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2022/05/05	2023/05/04
MTi-E066	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2023/04/26	2024/04/25
MTi-E066	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2022/05/05	2023/05/04
MTi-E064	Synthesized Sweeper	Agilent	83752A	3610A01957	2023/04/25	2024/04/24
MTi-E064	Synthesized Sweeper	Agilent	83752A	3610A01957	2022/05/05	2023/05/04
MTi-E065	DC Power Supply	Agilent	E3632A	MY40027695	2023/05/04	2024/05/03
MTi-E065	DC Power Supply	Agilent	E3632A	MY40027695	2022/05/05	2023/05/04
MTi-E022	Pulse Limiter	Schwarzbeck	VSTD 9561-F	00679	2022/08/24	2023/08/23
MTi-E072	Thermometer Clock Humidity Monitor	-	HTC-1	/	2023/05/05	2024/05/04
MTi-E072	Thermometer Clock Humidity Monitor	-	HTC-1	/	2022/05/06	2023/05/05

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTi-E057	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2023/04/26	2024/04/25
MTi-E057	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2022/05/05	2023/05/04
MTi-E010S	EMI Measurement Software	Farad	EZ-EMC Ver. EMEC-3A1	/	/	/
MTi-E014S	RF Test System	Tonscend	TS®JS1120 V2.6.88.0330	/	/	/

5 Test Result

5.1 RF output power

5.1.1 Limit

1）For FCC Part 22.913(a)(2):
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

2）For FCC Part 24.232(c):
The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 2 Watts.

3）For FCC Part 27.50(d):
The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 1 Watt.

4）For FCC Part 27.50(c):
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 3 Watts.

5）For FCC Part 27.50(a)(3):
For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.

6）For FCC 22.913:
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

7）For FCC 24.234: Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

5.1.2 Test procedure

1) The EUT's RF output port was connected to base station.

2) A call is set up by the SS according to the generic call set up procedure.

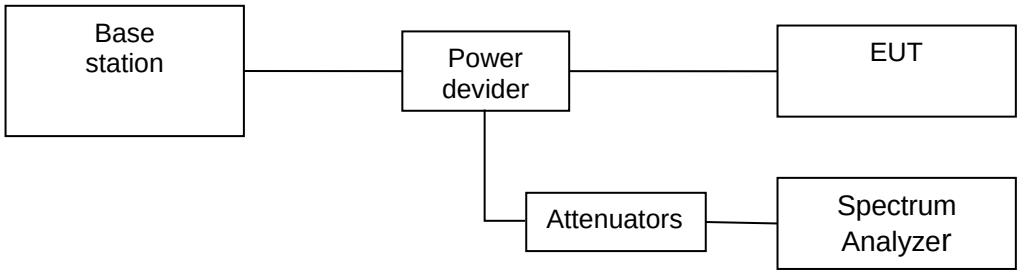
3) Set EUT at maximum power level through base station by power level command.

4) Measure the maximum output power of EUT at each frequency band and mode by base station.

5) The EUT was set up for the max output power with pseudo random data modulation.

6) These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each bandwidth.

5.1.3 Test setup



5.1.4 Test results

Note: see the Appendix A of Appendix for GSM&GPRS&EGPRS and Appendix A of Appendix for WCDMA Appendix A of Appendix for LTE.

5.2 Effective (Isotropic) Radiated Power Output Data (ERP/EIRP)

5.2.1 Limit

1) 22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

2) 27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

3) 27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

4) 27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

5) 27.50(h) The following power limits shall apply in the BRS and EBS:

   (2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

6) 27.50(a)(3):For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.

7) For FCC 22.913: The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

8) For FCC 24.234: Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

5.2.2 Test procedure

9) According to the power tested in section 5.1, select the maximum power in each mode, and use the following formula to calculate the corresponding ERP/EIRP.

EPR = conducted power + Antenna Gain -2.15
EIPR = conducted power + Antenna Gain

5.2.3 Test results

GSM850&GPRS850&EGPRS850

Band	Channel	Conducted power (dBm)	Antenna Gain(dBi)	Correction	ERP(dBm)	ERP(W)
GSM850	128	31.85	-1.83	2.15	27.87	0.61
GSM850	190	32.08	-1.83	2.15	28.1	0.65
GSM850	251	32.41	-1.83	2.15	28.43	0.70

Band	Channel	Slot	Conducted power (dBm)	Antenna Gain(dBi)	Correction	ERP(dBm)	ERP(W)
GPRS850	128	1	31.98	-1.83	2.15	28	0.63
GPRS850	128	2	29.91	-1.83	2.15	25.93	0.39
GPRS850	128	3	28.01	-1.83	2.15	24.03	0.25
GPRS850	128	4	25.82	-1.83	2.15	21.84	0.15
GPRS850	190	1	32.08	-1.83	2.15	28.1	0.65
GPRS850	190	2	30.04	-1.83	2.15	26.06	0.40
GPRS850	190	3	28.14	-1.83	2.15	24.16	0.26
GPRS850	190	4	26.15	-1.83	2.15	22.17	0.16
GPRS850	251	1	31.20	-1.83	2.15	27.22	0.53
GPRS850	251	2	29.10	-1.83	2.15	25.12	0.33
GPRS850	251	3	27.19	-1.83	2.15	23.21	0.21
GPRS850	251	4	25.99	-1.83	2.15	22.01	0.16

Band	Channel	Slot	Conducted power (dBm)	Antenna Gain(dBi)	Correction	ERP(dBm)	ERP(W)
EGPRS850	128	1	25.72	-1.83	2.15	21.74	0.15
EGPRS850	128	2	24.83	-1.83	2.15	20.85	0.12
EGPRS850	128	3	22.54	-1.83	2.15	18.56	0.07
EGPRS850	128	4	19.98	-1.83	2.15	16	0.04
EGPRS850	190	1	25.62	-1.83	2.15	21.64	0.15
EGPRS850	190	2	24.82	-1.83	2.15	20.84	0.12
EGPRS850	190	3	22.64	-1.83	2.15	18.66	0.07
EGPRS850	190	4	20.01	-1.83	2.15	16.03	0.04
EGPRS850	251	1	25.52	-1.83	2.15	21.54	0.14
EGPRS850	251	2	24.68	-1.83	2.15	20.7	0.12
EGPRS850	251	3	22.41	-1.83	2.15	18.43	0.07
EGPRS850	251	4	19.81	-1.83	2.15	15.83	0.04

WCDMA

RMC

Band	Channel	Conducted power (dBm)	Antenna Gain(dBi)	Correction	ERP(dBm)	ERP(W)
Band5	4132	22.21	-1.83	2.15	18.23	0.07
Band5	4183	22.35	-1.83	2.15	18.37	0.07
Band5	4233	22.76	-1.83	2.15	18.78	0.08

HSDPA

Band	Channel	SubTest	Conducted power (dBm)	Antenna Gain(dBi)	Correction	ERP(dBm)	ERP(W)
Band5	4132	1	21.53	-1.83	2.15	17.55	0.06
Band5	4132	2	21.01	-1.83	2.15	17.03	0.05
Band5	4132	3	20.61	-1.83	2.15	16.63	0.05
Band5	4132	4	20.64	-1.83	2.15	16.66	0.05
Band5	4183	1	21.88	-1.83	2.15	17.9	0.06
Band5	4183	2	21.57	-1.83	2.15	17.59	0.06
Band5	4183	3	21.11	-1.83	2.15	17.13	0.05
Band5	4183	4	21.15	-1.83	2.15	17.17	0.05
Band5	4233	1	21.50	-1.83	2.15	17.52	0.06
Band5	4233	2	21.31	-1.83	2.15	17.33	0.05
Band5	4233	3	20.92	-1.83	2.15	16.94	0.05
Band5	4233	4	20.87	-1.83	2.15	16.89	0.05

HSUPA

Band	Channel	SubTest	Conducted power (dBm)	Antenna Gain(dBi)	Correction	ERP(dBm)	ERP(W)
Band5	4132	1	18.43	-1.83	2.15	14.45	0.03
Band5	4132	2	19.67	-1.83	2.15	15.69	0.04
Band5	4132	3	19.48	-1.83	2.15	15.5	0.04
Band5	4132	4	19.27	-1.83	2.15	15.29	0.03
Band5	4132	5	21.80	-1.83	2.15	17.82	0.06
Band5	4183	1	20.40	-1.83	2.15	16.42	0.04
Band5	4183	2	20.54	-1.83	2.15	16.56	0.05
Band5	4183	3	20.06	-1.83	2.15	16.08	0.04
Band5	4183	4	20.08	-1.83	2.15	16.1	0.04
Band5	4183	5	22.13	-1.83	2.15	18.15	0.07
Band5	4233	1	20.00	-1.83	2.15	16.02	0.04
Band5	4233	2	20.19	-1.83	2.15	16.21	0.04
Band5	4233	3	19.67	-1.83	2.15	15.69	0.04
Band5	4233	4	19.73	-1.83	2.15	15.75	0.04
Band5	4233	5	21.86	-1.83	2.15	17.88	0.06

LTE:

Band	Bandwidth	Modulation	Channel	RB Configuration	Conducted power (dBm)	Antenna Gain(dBi)	Correction	ERP (dBm)	ERP (W)
Band5	1.4MHz	QPSK	20407	1RB#0	22.71	-1.83	2.15	18.73	0.07
Band5	1.4MHz	QPSK	20407	1RB#2	22.83	-1.83	2.15	18.85	0.08
Band5	1.4MHz	QPSK	20407	1RB#5	22.81	-1.83	2.15	18.83	0.08
Band5	1.4MHz	QPSK	20407	3RB#0	22.82	-1.83	2.15	18.84	0.08
Band5	1.4MHz	QPSK	20407	3RB#1	22.80	-1.83	2.15	18.82	0.08
Band5	1.4MHz	QPSK	20407	3RB#3	22.86	-1.83	2.15	18.88	0.08
Band5	1.4MHz	QPSK	20407	6RB#0	21.85	-1.83	2.15	17.87	0.06
Band5	1.4MHz	QPSK	20525	1RB#0	22.78	-1.83	2.15	18.8	0.08
Band5	1.4MHz	QPSK	20525	1RB#2	22.78	-1.83	2.15	18.8	0.08
Band5	1.4MHz	QPSK	20525	1RB#5	22.88	-1.83	2.15	18.9	0.08
Band5	1.4MHz	QPSK	20525	3RB#0	22.86	-1.83	2.15	18.88	0.08
Band5	1.4MHz	QPSK	20525	3RB#1	22.84	-1.83	2.15	18.86	0.08
Band5	1.4MHz	QPSK	20525	3RB#3	22.97	-1.83	2.15	18.99	0.08
Band5	1.4MHz	QPSK	20525	6RB#0	21.75	-1.83	2.15	17.77	0.06
Band5	1.4MHz	QPSK	20643	1RB#0	23.43	-1.83	2.15	19.45	0.09
Band5	1.4MHz	QPSK	20643	1RB#2	23.53	-1.83	2.15	19.55	0.09
Band5	1.4MHz	QPSK	20643	1RB#5	23.55	-1.83	2.15	19.57	0.09
Band5	1.4MHz	QPSK	20643	3RB#0	23.38	-1.83	2.15	19.4	0.09
Band5	1.4MHz	QPSK	20643	3RB#1	23.37	-1.83	2.15	19.39	0.09
Band5	1.4MHz	QPSK	20643	3RB#3	23.40	-1.83	2.15	19.42	0.09
Band5	1.4MHz	QPSK	20643	6RB#0	22.38	-1.83	2.15	18.4	0.07
Band5	1.4MHz	16QAM	20407	1RB#0	22.34	-1.83	2.15	18.36	0.07
Band5	1.4MHz	16QAM	20407	1RB#2	21.98	-1.83	2.15	18	0.06
Band5	1.4MHz	16QAM	20407	1RB#5	22.34	-1.83	2.15	18.36	0.07
Band5	1.4MHz	16QAM	20407	3RB#0	21.50	-1.83	2.15	17.52	0.06
Band5	1.4MHz	16QAM	20407	3RB#1	21.41	-1.83	2.15	17.43	0.06
Band5	1.4MHz	16QAM	20407	3RB#3	21.59	-1.83	2.15	17.61	0.06
Band5	1.4MHz	16QAM	20407	6RB#0	20.92	-1.83	2.15	16.94	0.05
Band5	1.4MHz	16QAM	20525	1RB#0	21.80	-1.83	2.15	17.82	0.06
Band5	1.4MHz	16QAM	20525	1RB#2	21.78	-1.83	2.15	17.8	0.06
Band5	1.4MHz	16QAM	20525	1RB#5	21.80	-1.83	2.15	17.82	0.06
Band5	1.4MHz	16QAM	20525	3RB#0	21.43	-1.83	2.15	17.45	0.06
Band5	1.4MHz	16QAM	20525	3RB#1	21.42	-1.83	2.15	17.44	0.06
Band5	1.4MHz	16QAM	20525	3RB#3	21.78	-1.83	2.15	17.8	0.06
Band5	1.4MHz	16QAM	20525	6RB#0	21.35	-1.83	2.15	17.37	0.05
Band5	1.4MHz	16QAM	20643	1RB#0	23.02	-1.83	2.15	19.04	0.08

Band5	1.4MHz	16QAM	20643	1RB#2	22.66	-1.83	2.15	18.68	0.07
Band5	1.4MHz	16QAM	20643	1RB#5	22.71	-1.83	2.15	18.73	0.07
Band5	1.4MHz	16QAM	20643	3RB#0	22.13	-1.83	2.15	18.15	0.07
Band5	1.4MHz	16QAM	20643	3RB#1	22.13	-1.83	2.15	18.15	0.07
Band5	1.4MHz	16QAM	20643	3RB#3	22.10	-1.83	2.15	18.12	0.06
Band5	1.4MHz	16QAM	20643	6RB#0	21.82	-1.83	2.15	17.84	0.06
Band5	3MHz	QPSK	20415	1RB#0	22.84	-1.83	2.15	18.86	0.08
Band5	3MHz	QPSK	20415	1RB#8	22.88	-1.83	2.15	18.9	0.08
Band5	3MHz	QPSK	20415	1RB#14	22.83	-1.83	2.15	18.85	0.08
Band5	3MHz	QPSK	20415	8RB#0	21.96	-1.83	2.15	17.98	0.06
Band5	3MHz	QPSK	20415	8RB#4	21.93	-1.83	2.15	17.95	0.06
Band5	3MHz	QPSK	20415	8RB#7	21.96	-1.83	2.15	17.98	0.06
Band5	3MHz	QPSK	20415	15RB#0	21.99	-1.83	2.15	18.01	0.06
Band5	3MHz	QPSK	20525	1RB#0	23.09	-1.83	2.15	19.11	0.08
Band5	3MHz	QPSK	20525	1RB#8	22.97	-1.83	2.15	18.99	0.08
Band5	3MHz	QPSK	20525	1RB#14	23.03	-1.83	2.15	19.05	0.08
Band5	3MHz	QPSK	20525	8RB#0	21.96	-1.83	2.15	17.98	0.06
Band5	3MHz	QPSK	20525	8RB#4	22.08	-1.83	2.15	18.1	0.06
Band5	3MHz	QPSK	20525	8RB#7	22.03	-1.83	2.15	18.05	0.06
Band5	3MHz	QPSK	20525	15RB#0	21.92	-1.83	2.15	17.94	0.06
Band5	3MHz	QPSK	20635	1RB#0	23.19	-1.83	2.15	19.21	0.08
Band5	3MHz	QPSK	20635	1RB#8	23.26	-1.83	2.15	19.28	0.08
Band5	3MHz	QPSK	20635	1RB#14	23.30	-1.83	2.15	19.32	0.09
Band5	3MHz	QPSK	20635	8RB#0	22.17	-1.83	2.15	18.19	0.07
Band5	3MHz	QPSK	20635	8RB#4	22.20	-1.83	2.15	18.22	0.07
Band5	3MHz	QPSK	20635	8RB#7	22.19	-1.83	2.15	18.21	0.07
Band5	3MHz	QPSK	20635	15RB#0	22.17	-1.83	2.15	18.19	0.07
Band5	3MHz	16QAM	20415	1RB#0	22.01	-1.83	2.15	18.03	0.06
Band5	3MHz	16QAM	20415	1RB#8	21.91	-1.83	2.15	17.93	0.06
Band5	3MHz	16QAM	20415	1RB#14	21.87	-1.83	2.15	17.89	0.06
Band5	3MHz	16QAM	20415	8RB#0	21.17	-1.83	2.15	17.19	0.05
Band5	3MHz	16QAM	20415	8RB#4	21.13	-1.83	2.15	17.15	0.05
Band5	3MHz	16QAM	20415	8RB#7	21.11	-1.83	2.15	17.13	0.05
Band5	3MHz	16QAM	20415	15RB#0	20.95	-1.83	2.15	16.97	0.05
Band5	3MHz	16QAM	20525	1RB#0	21.95	-1.83	2.15	17.97	0.06
Band5	3MHz	16QAM	20525	1RB#8	21.57	-1.83	2.15	17.59	0.06
Band5	3MHz	16QAM	20525	1RB#14	21.67	-1.83	2.15	17.69	0.06
Band5	3MHz	16QAM	20525	8RB#0	21.30	-1.83	2.15	17.32	0.05

Band5	3MHz	16QAM	20525	8RB#4	21.19	-1.83	2.15	17.21	0.05
Band5	3MHz	16QAM	20525	8RB#7	21.42	-1.83	2.15	17.44	0.06
Band5	3MHz	16QAM	20525	15RB#0	21.27	-1.83	2.15	17.29	0.05
Band5	3MHz	16QAM	20635	1RB#0	22.69	-1.83	2.15	18.71	0.07
Band5	3MHz	16QAM	20635	1RB#8	22.74	-1.83	2.15	18.76	0.08
Band5	3MHz	16QAM	20635	1RB#14	22.69	-1.83	2.15	18.71	0.07
Band5	3MHz	16QAM	20635	8RB#0	21.34	-1.83	2.15	17.36	0.05
Band5	3MHz	16QAM	20635	8RB#4	21.23	-1.83	2.15	17.25	0.05
Band5	3MHz	16QAM	20635	8RB#7	21.40	-1.83	2.15	17.42	0.06
Band5	3MHz	16QAM	20635	15RB#0	21.32	-1.83	2.15	17.34	0.05
Band5	5MHz	QPSK	20425	1RB#0	22.95	-1.83	2.15	18.97	0.08
Band5	5MHz	QPSK	20425	1RB#12	22.88	-1.83	2.15	18.9	0.08
Band5	5MHz	QPSK	20425	1RB#24	22.98	-1.83	2.15	19	0.08
Band5	5MHz	QPSK	20425	12RB#0	22.03	-1.83	2.15	18.05	0.06
Band5	5MHz	QPSK	20425	12RB#6	22.04	-1.83	2.15	18.06	0.06
Band5	5MHz	QPSK	20425	12RB#13	21.91	-1.83	2.15	17.93	0.06
Band5	5MHz	QPSK	20425	25RB#0	21.86	-1.83	2.15	17.88	0.06
Band5	5MHz	QPSK	20525	1RB#0	23.11	-1.83	2.15	19.13	0.08
Band5	5MHz	QPSK	20525	1RB#12	22.95	-1.83	2.15	18.97	0.08
Band5	5MHz	QPSK	20525	1RB#24	23.03	-1.83	2.15	19.05	0.08
Band5	5MHz	QPSK	20525	12RB#0	22.01	-1.83	2.15	18.03	0.06
Band5	5MHz	QPSK	20525	12RB#6	22.10	-1.83	2.15	18.12	0.06
Band5	5MHz	QPSK	20525	12RB#13	21.92	-1.83	2.15	17.94	0.06
Band5	5MHz	QPSK	20525	25RB#0	21.95	-1.83	2.15	17.97	0.06
Band5	5MHz	QPSK	20625	1RB#0	23.18	-1.83	2.15	19.2	0.08
Band5	5MHz	QPSK	20625	1RB#12	23.25	-1.83	2.15	19.27	0.08
Band5	5MHz	QPSK	20625	1RB#24	23.27	-1.83	2.15	19.29	0.08
Band5	5MHz	QPSK	20625	12RB#0	22.03	-1.83	2.15	18.05	0.06
Band5	5MHz	QPSK	20625	12RB#6	22.06	-1.83	2.15	18.08	0.06
Band5	5MHz	QPSK	20625	12RB#13	22.21	-1.83	2.15	18.23	0.07
Band5	5MHz	QPSK	20625	25RB#0	22.14	-1.83	2.15	18.16	0.07
Band5	5MHz	16QAM	20425	1RB#0	21.37	-1.83	2.15	17.39	0.05
Band5	5MHz	16QAM	20425	1RB#12	21.25	-1.83	2.15	17.27	0.05
Band5	5MHz	16QAM	20425	1RB#24	21.34	-1.83	2.15	17.36	0.05
Band5	5MHz	16QAM	20425	12RB#0	21.00	-1.83	2.15	17.02	0.05
Band5	5MHz	16QAM	20425	12RB#6	21.00	-1.83	2.15	17.02	0.05
Band5	5MHz	16QAM	20425	12RB#13	20.90	-1.83	2.15	16.92	0.05
Band5	5MHz	16QAM	20425	25RB#0	20.97	-1.83	2.15	16.99	0.05

Band5	5MHz	16QAM	20525	1RB#0	22.23	-1.83	2.15	18.25	0.07
Band5	5MHz	16QAM	20525	1RB#12	22.05	-1.83	2.15	18.07	0.06
Band5	5MHz	16QAM	20525	1RB#24	22.22	-1.83	2.15	18.24	0.07
Band5	5MHz	16QAM	20525	12RB#0	21.17	-1.83	2.15	17.19	0.05
Band5	5MHz	16QAM	20525	12RB#6	21.13	-1.83	2.15	17.15	0.05
Band5	5MHz	16QAM	20525	12RB#13	21.48	-1.83	2.15	17.5	0.06
Band5	5MHz	16QAM	20525	25RB#0	21.36	-1.83	2.15	17.38	0.05
Band5	5MHz	16QAM	20625	1RB#0	22.09	-1.83	2.15	18.11	0.06
Band5	5MHz	16QAM	20625	1RB#12	22.15	-1.83	2.15	18.17	0.07
Band5	5MHz	16QAM	20625	1RB#24	22.13	-1.83	2.15	18.15	0.07
Band5	5MHz	16QAM	20625	12RB#0	21.12	-1.83	2.15	17.14	0.05
Band5	5MHz	16QAM	20625	12RB#6	21.13	-1.83	2.15	17.15	0.05
Band5	5MHz	16QAM	20625	12RB#13	21.27	-1.83	2.15	17.29	0.05
Band5	5MHz	16QAM	20625	25RB#0	21.21	-1.83	2.15	17.23	0.05
Band5	10MHz	QPSK	20450	1RB#0	22.89	-1.83	2.15	18.91	0.08
Band5	10MHz	QPSK	20450	1RB#24	22.87	-1.83	2.15	18.89	0.08
Band5	10MHz	QPSK	20450	1RB#49	22.89	-1.83	2.15	18.91	0.08
Band5	10MHz	QPSK	20450	25RB#0	21.89	-1.83	2.15	17.91	0.06
Band5	10MHz	QPSK	20450	25RB#12	21.91	-1.83	2.15	17.93	0.06
Band5	10MHz	QPSK	20450	25RB#25	21.97	-1.83	2.15	17.99	0.06
Band5	10MHz	QPSK	20450	50RB#0	21.96	-1.83	2.15	17.98	0.06
Band5	10MHz	QPSK	20525	1RB#0	23.06	-1.83	2.15	19.08	0.08
Band5	10MHz	QPSK	20525	1RB#24	22.97	-1.83	2.15	18.99	0.08
Band5	10MHz	QPSK	20525	1RB#49	23.11	-1.83	2.15	19.13	0.08
Band5	10MHz	QPSK	20525	25RB#0	22.10	-1.83	2.15	18.12	0.06
Band5	10MHz	QPSK	20525	25RB#12	22.04	-1.83	2.15	18.06	0.06
Band5	10MHz	QPSK	20525	25RB#25	22.08	-1.83	2.15	18.1	0.06
Band5	10MHz	QPSK	20525	50RB#0	21.85	-1.83	2.15	17.87	0.06
Band5	10MHz	QPSK	20600	1RB#0	23.14	-1.83	2.15	19.16	0.08
Band5	10MHz	QPSK	20600	1RB#24	23.12	-1.83	2.15	19.14	0.08
Band5	10MHz	QPSK	20600	1RB#49	23.27	-1.83	2.15	19.29	0.08
Band5	10MHz	QPSK	20600	25RB#0	22.05	-1.83	2.15	18.07	0.06
Band5	10MHz	QPSK	20600	25RB#12	22.07	-1.83	2.15	18.09	0.06
Band5	10MHz	QPSK	20600	25RB#25	22.24	-1.83	2.15	18.26	0.07
Band5	10MHz	QPSK	20600	50RB#0	21.97	-1.83	2.15	17.99	0.06
Band5	10MHz	16QAM	20450	1RB#0	21.83	-1.83	2.15	17.85	0.06
Band5	10MHz	16QAM	20450	1RB#24	21.71	-1.83	2.15	17.73	0.06
Band5	10MHz	16QAM	20450	1RB#49	22.06	-1.83	2.15	18.08	0.06

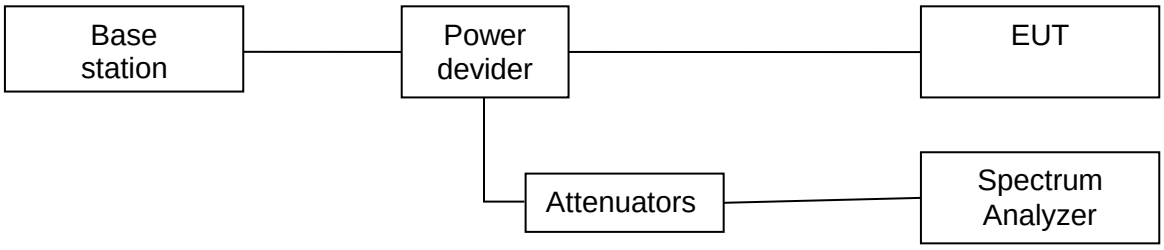
Band5	10MHz	16QAM	20450	25RB#0	20.87	-1.83	2.15	16.89	0.05
Band5	10MHz	16QAM	20450	25RB#12	20.85	-1.83	2.15	16.87	0.05
Band5	10MHz	16QAM	20450	25RB#25	21.18	-1.83	2.15	17.2	0.05
Band5	10MHz	16QAM	20450	50RB#0	21.00	-1.83	2.15	17.02	0.05
Band5	10MHz	16QAM	20525	1RB#0	21.64	-1.83	2.15	17.66	0.06
Band5	10MHz	16QAM	20525	1RB#24	21.72	-1.83	2.15	17.74	0.06
Band5	10MHz	16QAM	20525	1RB#49	21.78	-1.83	2.15	17.8	0.06
Band5	10MHz	16QAM	20525	25RB#0	21.22	-1.83	2.15	17.24	0.05
Band5	10MHz	16QAM	20525	25RB#12	21.22	-1.83	2.15	17.24	0.05
Band5	10MHz	16QAM	20525	25RB#25	21.48	-1.83	2.15	17.5	0.06
Band5	10MHz	16QAM	20525	50RB#0	21.39	-1.83	2.15	17.41	0.06
Band5	10MHz	16QAM	20600	1RB#0	21.91	-1.83	2.15	17.93	0.06
Band5	10MHz	16QAM	20600	1RB#24	21.90	-1.83	2.15	17.92	0.06
Band5	10MHz	16QAM	20600	1RB#49	21.98	-1.83	2.15	18	0.06
Band5	10MHz	16QAM	20600	25RB#0	21.24	-1.83	2.15	17.26	0.05
Band5	10MHz	16QAM	20600	25RB#12	21.24	-1.83	2.15	17.26	0.05
Band5	10MHz	16QAM	20600	25RB#25	21.30	-1.83	2.15	17.32	0.05
Band5	10MHz	16QAM	20600	50RB#0	21.37	-1.83	2.15	17.39	0.05

5.3 Peak-to-Average Ratio (CCDF)

5.3.1 Limits

Not exceed 13 dB

5.3.2 Test setup



5.3.3 Test procedure

FCC: CFR Part 24.232 (d), 27.50(a)

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

According to KDB 971168 5.7.1:

Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;

Set the number of counts to a value that stabilizes the measured CCDF curve;

Set the measurement interval to 1 ms

Record the maximum PAPR level associated with a probability of 0.1%

5.3.4 Test results

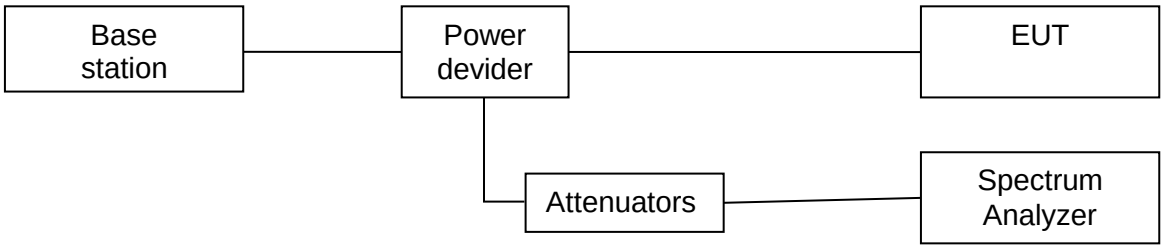
Note: see the Appendix B of Appendix for GSM&GPRS&EGPRS and Appendix B of Appendix for WCDMA Appendix B of Appendix for LTE.

5.4 26dB Bandwidth and occupied bandwidth

5.4.1 Limits

None, for reporting purposes only.

5.4.2 Test setup



5.4.3 Test procedures

The EUT' RF output port was connected to Spectrum Analyzer and Base Station via power divider. Spectrum analyzer's occupied bandwidth measure function was used to measure 99% bandwidth and -26dBc bandwidth

5.4.4 Test results

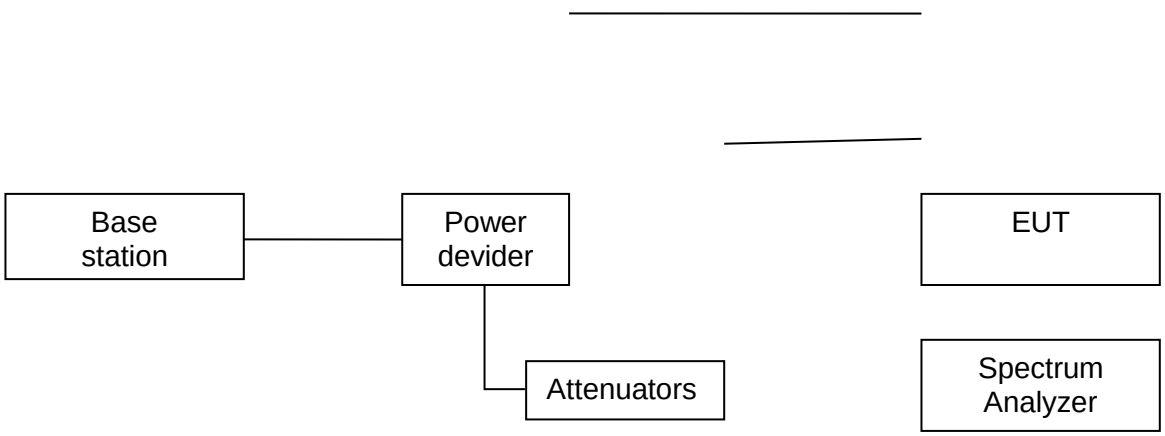
Note: see the Appendix C of Appendix for GSM&GPRS&EGPRS and Appendix C of Appendix for WCDMA Appendix C of Appendix for LTE.

5.5 Conducted emissions at the band edge

5.5.1 Limits

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

5.5.2 Test setup



5.5.3 Test procedure

The testing follows FCC KDB 971168 v03 Section 6.0.
The EUT was connected to spectrum analyzer and system simulator via a power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
The middle channel for the highest RF power within the transmitting frequency was measured.
The conducted spurious emission for the whole frequency range was taken.
Make the measurement with the spectrum analyzer's RBW = 200kHz, VBW = 620kHz.
Set spectrum analyzer with RMS detector.
Taking the record of maximum spurious emission.
The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB)
= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
= -13dBm.

5.5.4 Test results

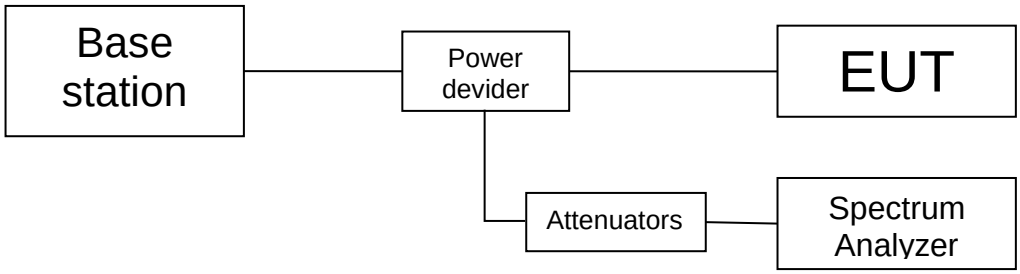
Note: see the Appendix D of Appendix for GSM&GPRS&EGPRS and Appendix D of Appendix for WCDMA Appendix D of Appendix for LTE.

5.6 Conducted spurious emissions

5.6.1 Limits

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10(P) dB (-13 dBm).
Band7: For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.

5.6.2 Test setup



5.6.3 Test procedure

a) The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.

b) The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

c) For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic.

d) Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

5.6.4 Test results

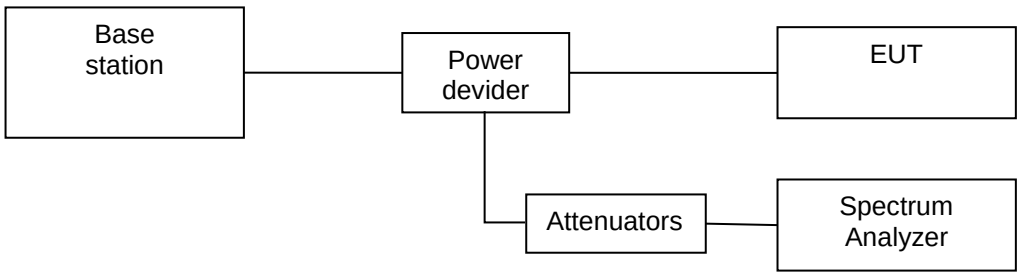
Note: see the Appendix E of Appendix for GSM&GPRS&EGPRS and Appendix E of Appendix for WCDMA Appendix E of Appendix for LTE.

5.7 Frequency Stablity

5.7.1 Limits

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d) (2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.42VDC and 4.18VDC, with a nominal voltage of 3.8VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from over stress. These voltages represent a tolerance from -5.4% to 10.8%. For the purposes of measuring frequency stability these voltage limits are to be used.

5.7.2 Test setup



5.7.3 Test procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.

5.7.4 Test results

Note: see the Appendix F of Appendix for GSM&GPRS&EGPRS and Appendix F of Appendix for WCDMA Appendix F of Appendix for LTE.

5.8 Field strength of spurious radiation measurement

5.8.1 Limits

LTE Band 5: -13dBm

5.8.2 Test procedure

1. Place the EUT in the center of the turntable.

a) For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference ground plane

b) For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.

2. Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.

3. The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.

4. Receiver or Spectrum set as follow:

Below 1GHz, RBW=100kHz, VBW=300kHz, Detector=Peak, Sweep time=Auto

Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peck, Sweep time=Auto

5. Each emission under consideration shall be evaluated:

a) Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.

b) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.

c) Return the turntable to the azimuth where the highest emission amplitude level was observed.

d) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.

e) Record the measured emission amplitude level and frequency

6. Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

7. Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.

8. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.

9. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.

10. For each emission that was detected and measured in the initial test

a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.

b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.

c) Record the output power level of the signal generator when equivalence is achieved in step b).

11. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.

12. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:

Pe = Ps(dBm) − cable loss (dB) + antenna gain (dBd)

where

Pe = equivalent emission power in dBm

Ps = source (signal generator) power in dBm

NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.

13. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:

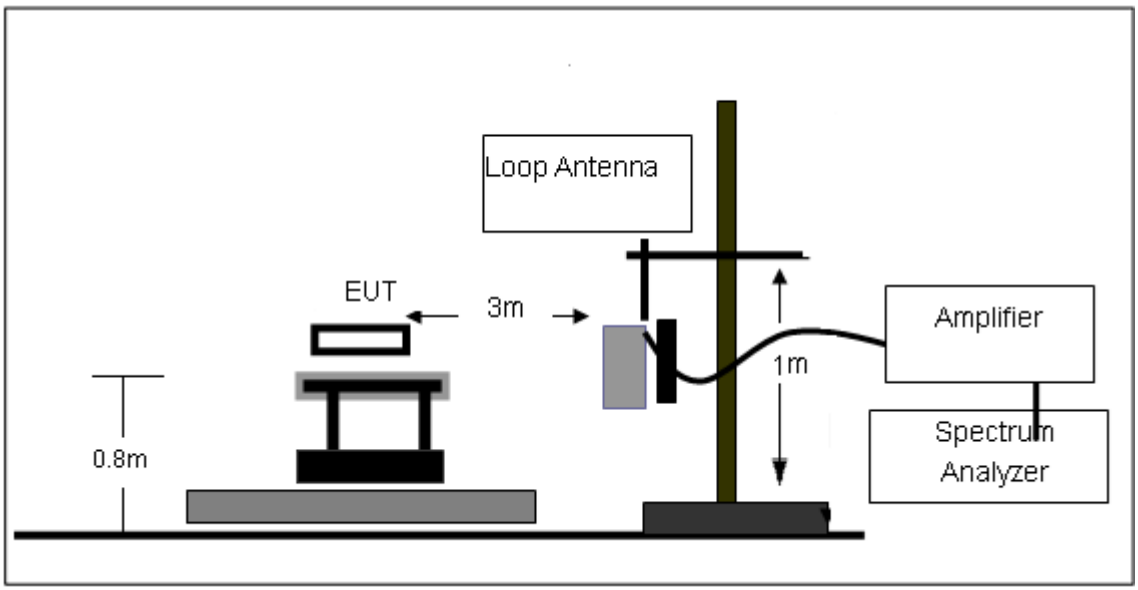
gain (dBd) = gain (dBi) − 2.15 dB.

If necessary, the antenna gain can be calculated from calibrated antenna factor information

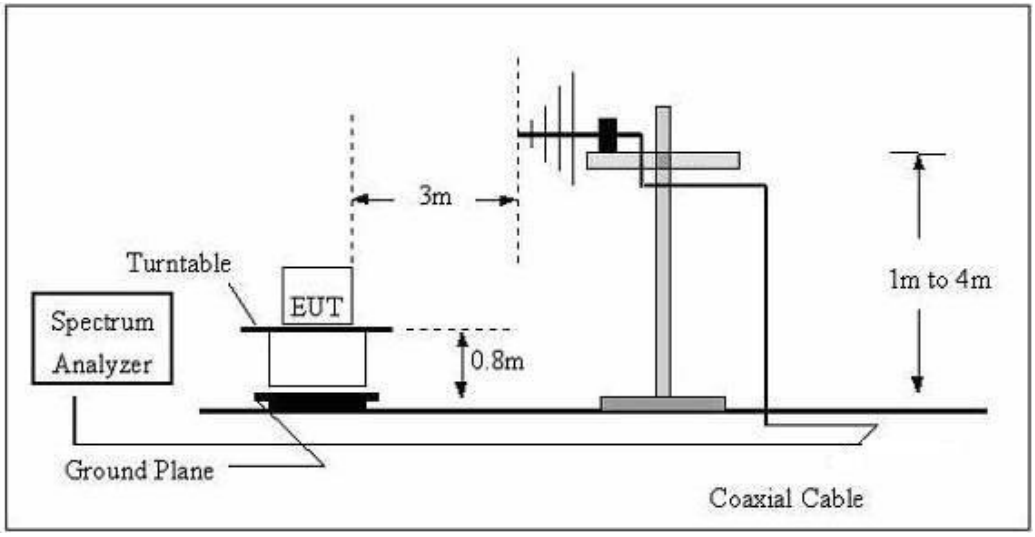
14. Provide the complete measurement results as a part of the test report.

5.8.3 Test setup

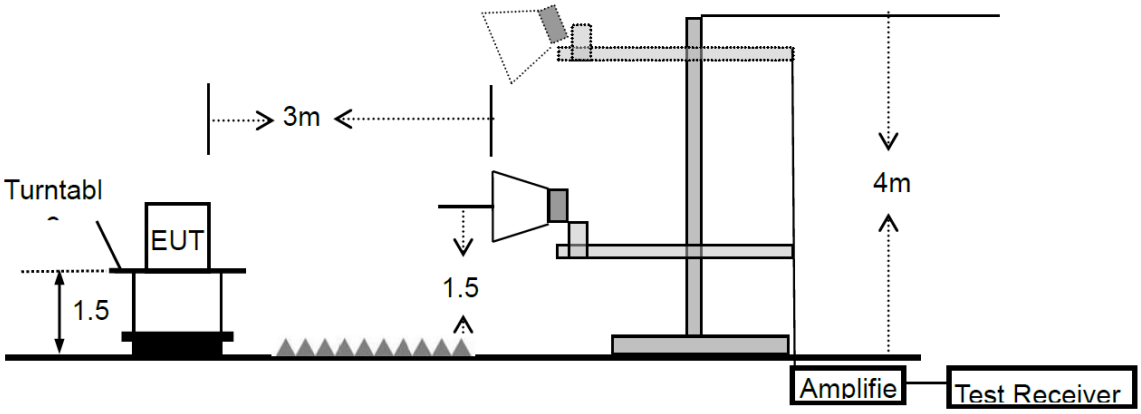
Radiated emission test-up frequency below 30MHz



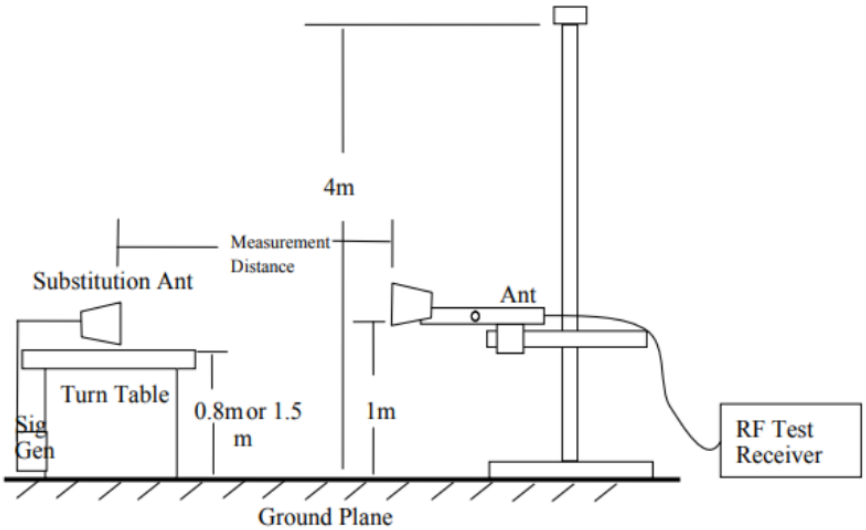
Radiated emission test-up frequency 30MHz~1GHz



Radiated emission test-up frequency above 1GHz



Substitution method



5.8.4 Test results

Radiated emissions between 30MHz – 1GHz

Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	H/V
GSM850-190-836.6						
41.8596	-59.97	-10.71	-70.68	-13.00	-57.68	V
99.4845	-73.72	-3.11	-76.83	-13.00	-63.83	V
189.5722	-66.93	-9.38	-76.31	-13.00	-63.31	V
226.8936	-66.72	-8.37	-75.09	-13.00	-62.09	V
349.2500	-67.92	-3.49	-71.41	-13.00	-58.41	V
608.3197	-68.89	0.19	-68.70	-13.00	-55.70	V
45.2166	-66.16	-5.59	-71.75	-13.00	-58.75	H
100.5366	-67.63	-10.34	-77.97	-13.00	-64.97	H
212.9218	-67.86	-9.55	-77.41	-13.00	-64.41	H
363.9403	-66.71	-4.83	-71.54	-13.00	-58.54	H
417.8241	-67.25	-4.19	-71.44	-13.00	-58.44	H
650.2294	-65.19	-1.96	-67.15	-13.00	-54.15	H

Radiated emissions 1 GHz ~ 25 GHz

Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	H/V
GSM850-190-836.6						
1673.200	-63.74	12.92	-50.82	-13.00	-37.82	V
1673.200	-69.47	12.92	-56.55	-13.00	-43.55	V
2509.800	-61.79	13.91	-47.88	-13.00	-34.88	V
2509.800	-67.60	13.91	-53.69	-13.00	-40.69	V
3346.400	-65.79	15.86	-49.93	-13.00	-36.93	V
3346.400	-71.23	15.86	-55.37	-13.00	-42.37	V
1673.200	-64.08	12.65	-51.43	-13.00	-38.43	H
1673.200	-70.30	12.65	-57.65	-13.00	-44.65	H
2509.800	-65.27	14.26	-51.01	-13.00	-38.01	H
2509.800	-71.71	14.26	-57.45	-13.00	-44.45	H
3346.400	-65.48	15.99	-49.49	-13.00	-36.49	H
3346.400	-71.31	15.99	-55.32	-13.00	-42.32	H

Notes:

Measurement= Reading Level+ Correct Factor

Over = Measurement– Limit

Radiated emissions between 30MHz – 1GHz

Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	H/V
WCDMA-Band5-4183-836.6						
41.6217	-57.86	-10.82	-68.68	-13.00	-55.68	V
103.1252	-69.45	-3.79	-73.24	-13.00	-60.24	V
189.5722	-63.43	-9.38	-72.81	-13.00	-59.81	V
355.2715	-64.97	-3.62	-68.59	-13.00	-55.59	V
434.4458	-64.46	-3.72	-68.18	-13.00	-55.18	V
659.1250	-65.69	-0.58	-66.27	-13.00	-53.27	V
43.9658	-66.19	-5.59	-71.78	-13.00	-58.78	H
101.6889	-66.74	-10.48	-77.22	-13.00	-64.22	H
224.9133	-66.48	-8.85	-75.33	-13.00	-62.33	H
361.0802	-66.48	-4.73	-71.21	-13.00	-58.21	H
425.4008	-65.99	-4.14	-70.13	-13.00	-57.13	H
670.7832	-65.93	-1.72	-67.65	-13.00	-54.65	H

Radiated emissions 1 GHz ~ 25 GHz

Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	H/V
WCDMA-Band5-4183-836.6						
1673.200	-64.06	12.92	-51.14	-13.00	-38.14	V
1673.200	-74.27	12.92	-61.35	-13.00	-48.35	V
2509.800	-61.37	13.91	-47.46	-13.00	-34.46	V
2509.800	-71.50	13.91	-57.59	-13.00	-44.59	V
3346.400	-65.69	15.86	-49.83	-13.00	-36.83	V
3346.400	-75.40	15.86	-59.54	-13.00	-46.54	V
1673.200	-62.03	12.65	-49.38	-13.00	-36.38	H
1673.200	-71.99	12.65	-59.34	-13.00	-46.34	H
2509.800	-62.66	14.26	-48.40	-13.00	-35.40	H
2509.800	-72.71	14.26	-58.45	-13.00	-45.45	H
3346.400	-64.69	15.99	-48.70	-13.00	-35.70	H
3346.400	-74.55	15.99	-58.56	-13.00	-45.56	H

Notes:

Measurement= Reading Level+ Correct Factor

Over = Measurement– Limit

Radiated emissions between 30MHz – 1GHz

Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	H/V
LTE-Band5-20525-836.5						
44.5087	-60.38	-9.49	-69.87	-13.00	-56.87	V
99.7464	-74.22	-3.09	-77.31	-13.00	-64.31	V
227.2918	-66.34	-8.36	-74.70	-13.00	-61.70	V
355.1157	-66.74	-3.61	-70.35	-13.00	-57.35	V
522.7180	-67.94	-1.75	-69.69	-13.00	-56.69	V
612.3325	-67.48	0.33	-67.15	-13.00	-54.15	V
42.0250	-66.85	-5.69	-72.54	-13.00	-59.54	H
105.3179	-65.96	-10.92	-76.88	-13.00	-63.88	H
274.5547	-67.13	-7.32	-74.45	-13.00	-61.45	H
354.3384	-67.38	-4.51	-71.89	-13.00	-58.89	H
495.0657	-65.50	-4.21	-69.71	-13.00	-56.71	H
594.3508	-66.63	-2.48	-69.11	-13.00	-56.11	H

Radiated emissions 1 GHz ~ 25 GHz

Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Polarization
(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	H/V
LTE-Band5-20525-836.5						
1673.000	-58.77	12.92	-45.85	-13.00	-32.85	V
1673.000	-68.33	12.92	-55.41	-13.00	-42.41	V
2509.500	-50.15	13.91	-36.24	-13.00	-23.24	V
2509.500	-60.23	13.91	-46.32	-13.00	-33.32	V
3346.000	-63.00	15.86	-47.14	-13.00	-34.14	V
3346.000	-73.41	15.86	-57.55	-13.00	-44.55	V
1673.000	-55.02	12.65	-42.37	-13.00	-29.37	H
1673.000	-64.98	12.65	-52.33	-13.00	-39.33	H
2509.500	-47.76	14.26	-33.50	-13.00	-20.50	H
2509.500	-59.49	14.26	-45.23	-13.00	-32.23	H
3346.000	-62.26	15.99	-46.27	-13.00	-33.27	H
3346.000	-72.50	15.99	-56.51	-13.00	-43.51	H

Notes:

Measurement= Reading Level+ Correct Factor

Over = Measurement– Limit

Note: All modes have been tested. The report only shows the worst mode.

Photographs of the Test Setup

See the Appendix – Test Setup Photos.

Photographs of the EUT

See the Appendix - EUT Photos.

----End of Report----