RF Test Report

For

Applicant name:	**VL Wireless Inc**
Address:	2970 E La Palma Ave Suite L, Anaheim, CALIFORNIA 92806 United States
EUT name:	Mobile Phone
Brand name:	VL
Model number:	VL68Pro
Series model number:	N/A
FCC ID:	2BS4HVL68PRO

Issued By

Company name:	**BTF Testing Lab (Shenzhen) Co., Ltd.**
Address:	Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Report number:	BTF251103R01604
Test standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part22 FCC CFR Title 47 Part24 FCC CFR Title 47 Part27 FCC CFR Title 47 Part90
Test conclusion:	Pass
Date of sample receipt:	2025-11-03
Test date:	2025-11-04 to 2026-01-16
Date of issue:	2026-01-19
Test by:	Sean He / Tester
Prepared by:	Chris Liu / Project engineer
Approved by:	Ryan.CJ /EMC manager

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Revision History		
Version	Issue date	Revisions content
R_V0	2026-01-19	Original
Note: *Once the revision has been made, then previous versions reports are invalid.*		

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1 Introduction

1.1 Laboratory Location

Test location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Phone number:	+86-0755-23146130
Fax number:	+86-0755-23146130

1.2 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1409**
  BTF Testing Lab (Shenzhen) Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 518915.
- **CNAS - Registration No.: CNAS L17568**
  BTF Testing Lab (Shenzhen) Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L17568.
- **A2LA - Registration No.: 6660.01**
  BTF Testing Lab (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

1.3 Announcement

(1) The test report reference to the report template version v0.
(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
(3) The test report is invalid if there is any evidence and/or falsification.
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(6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.
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2 Product Information

2.1 Application Information

Company name:	VL Wireless Inc
Address:	2970 E La Palma Ave Suite L, Anaheim, CALIFORNIA 92806 United States

2.2 Manufacturer Information

Company name:	VL Wireless Inc
Address:	2970 E La Palma Ave Suite L, Anaheim, CALIFORNIA 92806 United States

2.3 Factory Information

Company name:	ZTECH COMMNICATION(SZ) CO LTD
Address:	FL 7 BLOCK D BAO'AN ZHIGU INNOVATION PARK YIN'TIAN ROAD NO.4 XI'XIANG STR'BAO'AN DISTRICT SZ CHINA

2.4 General Description of Equipment under Test (EUT)

EUT name	Mobile Phone
Under test model name	VL68Pro
Series model name	N/A
Description of model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Rating:	Adapter Model: VL68Pro Input: 100-240V, 50/60Hz 0.3A Output: 5.0V⎓1.5A 7.5W Battery:4000mAh 15.4Wh 3.85V

2.5 Technical Information

Operation frequency:	GSM/GPRS/EGPRS 850: 824.2 MHz ~ 848.8 MHz GSM/GPRS/EGPRS 1900: 1850.2 MHz ~ 1909.8 MHz WCDMA/HSDPA/HSUPA Band 2: 1852.4 MHz ~ 1907.6 MHz WCDMA/HSDPA/HSUPA Band 4: 1712.4 MHz ~ 1752.6 MHz WCDMA/HSDPA/HSUPA Band 5: 826.4 MHz ~ 846.6 MHz FDD LTE Band 2: 1850.7 MHz ~ 1909.3 MHz FDD LTE Band 4: 1710.7 MHz ~ 1754.3 MHz FDD LTE Band 5: 824.7 MHz ~ 848.3 MHz FDD LTE Band 12: 699.7 MHz ~ 715.3 MHz FDD LTE Band 13: 779.5MHz ~784.5MHz FDD LTE Band 14: 790.5 MHz ~ 795.5 MHz FDD LTE Band 17:706.5 MHz ~ 713.5 MHz FDD LTE Band 25: 1850.7 MHz ~ 1914.3 MHz

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	FDD LTE Band 26: 814.7 MHz ~ 848.3 MHz FDD LTE Band 66: 1710.7 MHz ~ 1779.3 MHz FDD LTE Band 71:665.5 MHz ~ 695.5 MHz	
Modulation Type:	GSM/GPRS	GMSK
	EGPRS	8PSK
	WCDMA	QPSK
	HSDPA/HSUPA	QPSK
		16QAM
	LTE	QPSK
		16QAM
Antenna type:	Internal Antenna	
Antenna gain:	GSM 850: -1.34 dBi PCS 1900: 1.37 dBi WCDMA Band 2: 1.37 dBi WCDMA Band 4: 0.72 dBi WCDMA Band 5: -1.34 dBi FDD LTE Band 2: 1.37 dBi FDD LTE Band 4: 0.72 dBi FDD LTE Band 5: -1.34 dBi (declare by Applicant)	FDD LTE Band 12: -1.91 dBi FDD LTE Band 13: -1.52 dBi FDD LTE Band 14: -1.52 dBi FDD LTE Band 17: -1.91 dBi FDD LTE Band 25: 1.37 dBi FDD LTE Band 26: -1.34 dBi FDD LTE Band 66: 0.72 dBi FDD LTE Band 71: -2.48 dBi (declare by Applicant)
Power Class	GSM/GPRS 850: 4 GSM/GPRS 1900: 1 EGPRS 850/1900: E2 WCDMA/HSDPA/HSUPA Band 2: 3 WCDMA/HSDPA/HSUPA Band 4: 3 WCDMA/HSDPA/HSUPA Band 5: 3 FDD LTE Band 2: 3 FDD LTE Band 4: 3 FDD LTE Band 5: 3	FDD LTE Band 7: 3 FDD LTE Band 12: 3 FDD LTE Band 13: 3 FDD LTE Band 25: 3 FDD LTE Band 26: 3 FDD LTE Band 41: 3 FDD LTE Band 66: 3 FDD LTE Band 71:3
Maximum conducted power	GSM850: 31.77dBm GSM1900: 29.38dBm WCDMA Band II:22.55dBm WCDMA Band IV: 22.55dBm WCDMA Band V: 22.26dBm LTE Band 2: 22.16dBm LTE Band 4: 22.34dBm LTE Band 5: 22.92dBm	FDD LTE Band 12 22.16dBm FDD LTE Band 13:21.85dBm FDD LTE Band 14:22.73dBm FDD LTE Band 17: 22.07dBm FDD LTE Band 25: 22.17dBm FDD LTE Band 26a: 22.36dBm FDD LTE Band 26b: 22.50dBm FDD LTE Band 66: 22.35dBm FDD LTE Band 71: 22.39dBm

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3 Test Information

3.1 Test Standards

Identity	Document Title
FCC CFR Title 47 Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
FCC CFR Title 47 Part 22 Subpart H	Cellular Radiotelephone Service
FCC CFR Title 47 Part 24 Subpart E	Broadband PCS
FCC CFR Title 47 Part 27 Subpart H	Competitive Bidding Procedures for the 698-746 MHz Band
FCC CFR Title 47 Part 27 Subpart L	1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 2110-2155MHz, 2155-2180 MHz, 2180-2200 MHz Bands
FCC CFR Title 47 Part 27 Subpart M	Broadband Radio Service and Educational Broadband Service
FCC CFR Title 47 Part 90 Subpart S	Regulations Governing Licensing and Use of Frequencies in the 806-824, 851-869, 896-901, and 935-940 MHz Bands
FCC CFR Title 47 Part 90 Subpart R	Regulations Governing the Licensing and Use of Frequencies in the 763-775 and 793-805 MHz Bands
ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
ANSI/TIA-603-E-2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards

3.2 Summary of Test

Clauses	Test Items	Result
§ 2.1046 § 22.913(a)(5) –GSM/WCDMA850 & LTE B5/B26 § 24.232(c) –PCS/WCDMA1900 & LTE B2/B25 § 27.50(c)(10) –LTE B12/B17 § 27.50(d)(4) –WCDMA1700 & LTE B4/B66 27.50(b) (10)-- LTE B13 § 27.50(h)(2) –LTE B7/B38/B41 § 90.635(b) –LTE B26 Part 90.541(c)(d)-B14	RF Output Power	Pass
§ 24.232(d) –PCS/WCDMA1900 & LTE B2/B25 § 27.50(d)(5) –WCDMA1700 & LTE B4/B66/B13 Part 96.41(g)-B14	Peak-to-Average Power Ratio	Pass
§ 2.1047	Modulation Characteristics	Pass
§ 2.1049	26dB Emission Bandwidth 99% Occupied Bandwidth	Pass
§ 2.1051	Out of Band Emission at Antenna Terminals	Pass

§ 22.917(a) –GSM/WCDMA850 & LTE B5/B26 § 24.238(a) –PCS/WCDMA1900 & LTE B2/B25 § 27.53(g) –LTE B12/B17 § 27.53(h) –LTE B4/B66 § 27.53(m)(4) –LTE B7/B38/B41 § 90.691(a) –LTE B26 27.53(c)-LTE B13 Part 90.543(c)-B14		
§ 2.1053 § 22.917(a) –GSM/WCDMA850 & LTE B5/B26 § 24.238(a) –PCS/WCDMA1900 & LTE B2/B25 § 27.53(f), 27.53(c) –LTE B13 § 27.53(g) –LTE B12/B17 § 27.53(h) –LTE B4/B66 § 27.53(m)(4) –LTE B7/B38/B41 § 90.691(a) –LTE B26 Part 90.543(c)-B14	Field Strength of Spurious Radiation	Pass
27.53(f)	Frequency Stability	Pass
Remark: *1. Pass: met the requirements.* *2. N/A: not applicable.*		

3.3 Uncertainty of Test

Measurement	Value
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3.0 dB
Unwanted Emissions, conducted	±3.0 dB
Supply voltages	±3 %
Time	±5 %
Conducted Emission for LISN (9kHz ~ 150kHz)	±2.97 dB
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.45 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.80 dB
Radiated Emission (1GHz ~ 18GHz)	±4.82 dB
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3.4 Additions to, deviations, or exclusions from the method

None

3.5 Test Auxiliary Equipment

Description	Manufacturer	Model	Serial No.	Length	Description
/	/	/	/	/	/

3.6 Test Equipment List

Radiated Emission Test					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2025/10/17	2026/10/16
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2025/10/17	2026/10/16
Log periodic antenna	Schwarzbeck	VULB 9168	01328	2025/10/18	2026/10/17
Preamplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9744	00246	2025/5/26	2026/5/25
BELOW-Cable	REBES Talent	9K1G	21101576	2025/8/23	2026/8/22
Horn Antenna	Schwarzbeck	BBHA9120D	2597	2025/10/18	2026/10/17
Preamplifier (1GHz ~ 18GHz)	Schwarzbeck	BBV9718D	00008	2025/5/26	2026/5/25
Preamplifier	TSTPASS	LNA10180G45	TS2215007	2025/5/26	2026/5/25
ABOVE-Cable	REBES Talent	1~18G	21101558	2025/8/23	2026/8/22

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Horn Antenna	SCHWARZBECK	BBHA9170	1157	2025/10/18	2026/10/17
Low Noise Pre-amplifier	Sket	LNPA_1840G-50	SK2022032902	2025/10/17	2026/10/16
ABOVE-Cable2	REBES Talent	18~40G	21101686	2025/8/23	2026/8/22
ABOVE-Cable1	REBES Talent	18~40G	21101687	2025/8/23	2026/8/22
Test Software	Frad	EZ_EMC	Version: FA-03A2 RE+		

Conducted test method					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Cell Site Test Set	HP	8921A	US35010158	2025/10/17	2026/10/16
Spectrum Analyzer	Keysight	N9020A	MY50410020	2025/10/17	2026/10/16
ESG Vector Signal Generator	Agilent	E4438C	MY45094854	2025/10/17	2026/10/16
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2025/10/17	2026/10/16
Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	161997	2025/10/17	2026/10/16
Programmable Constant Temperature And Humidity Test Chamber	ZZCKONG	ZZ-K02A	20210928007	2025/10/17	2026/10/16
DC Power Supply	Tongmen	etm-6050c	20211026123	2025/10/17	2026/10/16
RF Control Unit	Techy	TR1029-1	/	2025/10/17	2026/10/16
RF Sensor Unit	Techy	TR1029-2	/	2025/10/17	2026/10/16
RF shielding box	Yinuoxin Electronics	50*50*50 cm	N/A	2025/5/26	2026/5/25
Test Software	TST Pass	/	Version: 2.0		

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4 Test Configuration

4.1 Environment Condition

Selected Values During Tests		
Temperature	Relative Humidity	Ambient Pressure
Normal: +15°C to +35°C Extreme: 0°C to +45°C	20% to 75%	86 kPa to 106 kPa

4.2 Test mode

GSM mode:	Keep the EUT communication with simulated station in GSM mode
GPRS mode:	Keep the EUT communication with simulated station in GPRS mode
EGPRS mode:	Keep the EUT communication with simulated station in EGPRS mode
RMC mode:	Keep the EUT communication with simulated station in RMC mode
HSDPA mode:	Keep the EUT communication with simulated station in HSDPA mode
HSUPA mode:	Keep the EUT communication with simulated station in HSUPA mode
QPSK mode:	Keep the EUT communication with simulated station in QPSK mode
16QAM mode:	Keep the EUT communication with simulated station in 16QAM mode
Remark: Per-scan all kind of data rate, and report only reflects the test data of worst data rate mode.	

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4.3 Test Channel of EUT

Regards to the operating frequency range over 10 MHz, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

GSM 850			PCS 1900		
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
Lowest	128	824.2	Lowest	512	1850.2
Middle	190	836.6	Middle	661	1880.0
Highest	251	848.8	Highest	810	1909.8
WCDMA 850			**WCDMA 1900**		
Lowest	4132	826.4	Lowest	9262	1852.4
Middle	4183	836.6	Middle	9400	1880.0
Highest	4233	846.6	Highest	9538	1907.6
WCDMA 1700					
Lowest	1312	1712.4			
Middle	1413	1732.6			
Highest	1513	1752.6			

LTE Band 2					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	18607	1850.7	Lowest	18915	1851.5
Middle	18900	1880.0	Middle	18900	1880.0
Highest	19193	1909.3	Highest	19185	1908.5
5 MHz			**10 MHz**		
Lowest	18625	1852.5	Lowest	18650	1855.0
Middle	18900	1880.0	Middle	18900	1880.0
Highest	19175	1907.5	Highest	19150	1905.0
15 MHz			**20 MHz**		
Lowest	18675	1857.5	Lowest	18700	1860.0
Middle	18900	1880.0	Middle	18900	1880.0
Highest	19125	1902.5	Highest	19100	1900.0

LTE Band 4					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	19957	1710.7	Lowest	19965	1711.5
Middle	20175	1732.5	Middle	20175	1732.5
Highest	20393	1754.3	Highest	20385	1753.5
5 MHz			**10 MHz**		
Lowest	19975	1712.5	Lowest	20000	1715.0
Middle	20175	1732.5	Middle	20175	1732.5
Highest	20375	1752.5	Highest	20350	1750.0
15 MHz			**20 MHz**		

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Lowest	20025	1717.5	Lowest	20050	1720.0
Middle	20175	1732.5	Middle	20175	1732.5
Highest	20325	1747.5	Highest	20300	1745.0
LTE Band 5					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	20407	824.7	Lowest	20415	825.5
Middle	20525	836.5	Middle	20525	836.5
Highest	20643	848.3	Highest	20635	847.5
5 MHz			**10 MHz**		
Lowest	20425	826.5	Lowest	20450	829.0
Middle	20525	836.5	Middle	20525	836.5
Highest	20625	846.5	Highest	20600	844.0

LTE Band 12					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	23017	699.70	Lowest	23025	700.50
Middle	23095	707.50	Middle	23095	707.50
Highest	23173	715.30	Highest	23165	714.50
5 MHz			**10 MHz**		
Lowest	23035	701.50	Lowest	23060	704.00
Middle	23095	707.50	Middle	23095	707.50
Highest	23155	713.50	Highest	23130	711.00
LTE Band 13					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
5 MHz			**10 MHz**		
Lowest	23205	779.5	Lowest	/	/
Middle	23230	782	Middle	23230	751
Highest	23255	784.5	Highest	/	/
LTE Band 14					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
5 MHz			**10 MHz**		
Lowest	23305	790.5	Lowest	/	/
Middle	23330	793	Middle	23330	751
Highest	23355	795.5	Highest	/	/
LTE Band 17					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
5 MHz			**10 MHz**		
Lowest	23755	706.50	Lowest	23780	709.00
Middle	23790	710.00	Middle	23790	710.00
Highest	23825	713.50	Highest	23800	711.00

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LTE Band 25					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	26047	1850.70	Lowest	26055	1851.50
Middle	26365	1882.50	Middle	26365	1882.50
Highest	26683	1914.30	Highest	26675	1913.50
5 MHz			**10 MHz**		
Lowest	26065	1852.50	Lowest	26090	1855.00
Middle	26365	1882.50	Middle	26365	1882.50
Highest	26665	1912.50	Highest	26640	1910.00
15 MHz			**20 MHz**		
Lowest	26115	1857.50	Lowest	26140	1860.00
Middle	26365	1882.50	Middle	26365	1882.50
Highest	26615	1907.50	Highest	26590	1905.00

LTE Band 26 (for Part 22H)					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	26797	824.7	Lowest	26805	825.5
Middle	26915	836.5	Middle	26915	836.5
Highest	27033	848.3	Highest	27025	847.5
5 MHz			**10 MHz**		
Lowest	26815	826.5	Lowest	26840	829.0
Middle	26915	836.5	Middle	26915	836.5
Highest	27015	846.5	Highest	26990	844.0
15 MHz					
Lowest	26865	831.5			
Middle	26915	836.5			
Highest	26965	841.5			

LTE Band 26 (for Part 90S)					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	26697	814.7	Lowest	26705	815.5
Middle	26740	819.0	Middle	26740	819.0
Highest	26783	823.3	Highest	26775	822.5
5 MHz			**10 MHz**		
Lowest	26715	816.5	Lowest	/	/
Middle	26740	819.0	Middle	26740	819.0
Highest	26765	821.5	Highest	/	/

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LTE Band 66					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest	131979	1710.7	Lowest	131987	1711.5
Middle	132322	1745.0	Middle	132322	1745.0
Highest	132665	1779.3	Highest	132657	1778.5
5 MHz			**10 MHz**		
Lowest	131997	1712.5	Lowest	132022	1715.0
Middle	132322	1745.0	Middle	132322	1745.0
Highest	132647	1777.5	Highest	132622	1775.0
15 MHz			**20 MHz**		
Lowest	132047	1717.5	Lowest	132072	1720.0
Middle	132322	1745.0	Middle	132322	1745.0
Highest	132597	1772.5	Highest	132572	1770.0

LTE Band 71					
Channels	Channel No.	Frequency (MHz)	Channels	Channel No.	Frequency (MHz)
5 MHz			**10 MHz**		
Lowest	133147	665.5	Lowest	133172	668
Middle	133297	680.5	Middle	133297	680.5
Highest	133447	695.5	Highest	133422	693
15 MHz			**20 MHz**		
Lowest	133197	670.5	Lowest	133222	673
Middle	133297	680.5	Middle	133322	683
Highest	133397	690.5	Highest	133372	688

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4.4 Test procedure

Radiated test method
For below 1GHz: 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. **For above 1GHz:** 1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method
1. The GSM/WCDMA/LTE antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

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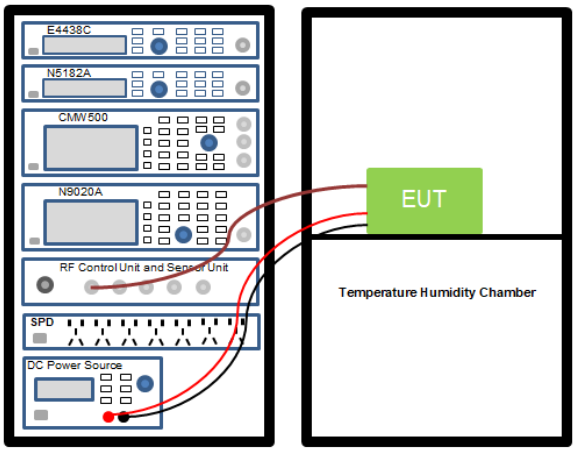
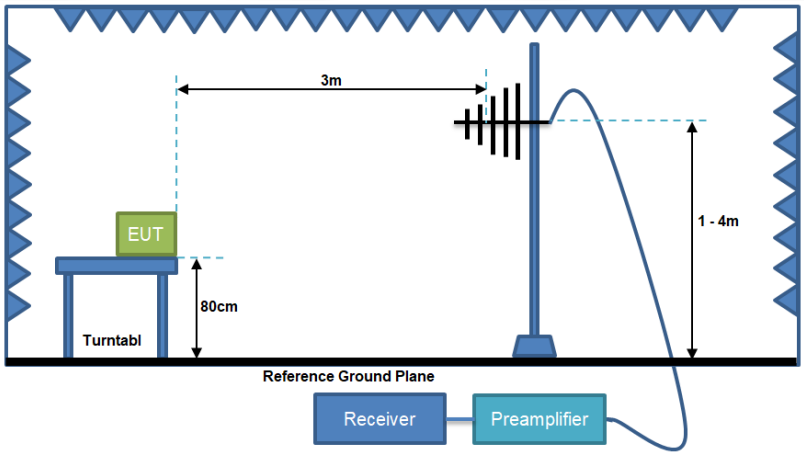
4.5 Test Setup Block

1) Conducted test method:

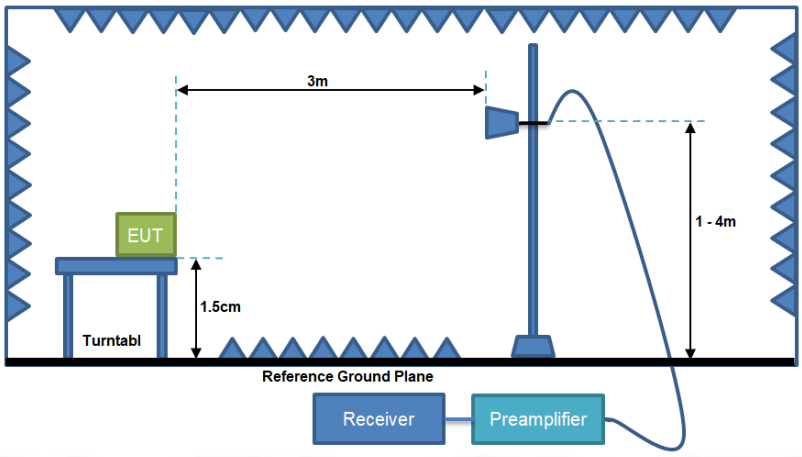


2) Radiated test method:

Below 1GHz



Above 1GHz



5 Technical requirements specification

5.1 Transmitter Radiated Power (EIRP/ERP)

5.1.1 Limit

FCC § 2.1046 & 22.913(a) & 24.232(c) & 27.50(a) & 27.50(b) & 27.50(c) & 27.50(d) & 27.50(h) & 90.635(b) & 90.542(a); RSS-103 4.6; RSS-132 5.4, RSS-133 6.4, RSS-139 6.5, RSS199 4.4

According to FCC section 22.913(a) (5), the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC section 24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to FCC section 27.50(a) (3), for mobile and portable stations transmitting in the 2305-2315MHz band or the 2350-2360MHz 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.

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

FCC section 27.50(c) (10), portable stations (hand-held devices) in the 600MHz uplink band and the 698-746MHz band, and fixed and mobile stations in the 600MHz uplink band are limited to 3 watts ERP.

FCC section 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.

(7) Fixed, mobile, and portable (hand-held) stations operating in the 2000-2020 MHz band are limited to 2 watts EIRP.

And FCC section 27.50(h) (2), for 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.

According to FCC section 90.635(b), the maximum output power of the transmitter for mobile stations is 100 watts (20dBW).

According to FCC section 90.542(a) (7), portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

5.1.2 Test Setup

The section 4.4 test setup 4 description is used for conducted test, and the test setup description is used for radiated test. The photo of test setup please refer to Appendix I Test Setup Photos

5.1.3 Test Procedure

Description of the Conducted Output Power Measurement

The EUT is coupled to the SS with attenuator through power splitter; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. A system simulator is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The relevant equation for determining the conducted measured value is:

Conducted Output Power Value (dBm) = Measured Value (dBm) + Path Loss (dB)

where:
Conducted Output Power Value = final conducted measured value in the conducted power test, in dBm;
Measured Value = measured conducted power received by spectrum analyzer or power meter, in dBm;
Path Loss = signal attenuation in the connecting cable between the transmitter and spectrum analyzer or power meter, including external cable loss, in dB;

During the test, the data of Path Loss (dB) is added in the spectrum analyzer or power meter, so Measured Value (dBm) is the final values which contains the data of Path Loss (dB).

For example:

In the conducted output power test, when measured value for GSM850 is 24.7 dBm, and path loss is 8.5 dB, then final conducted output power value is:
Conducted Output Power Value (dBm) = 24.7 dBm + 8.5 dB = 33.2 dBm

Description of the Transmitter Radiated Power Measurement

In many cases, the RF output power limits for licensed digital transmission devices is specified in terms of effective radiated power (ERP) or equivalent isotropic radiated power (EIRP). Typically, ERP is specified when the operating frequency is less than or equal to 1 GHz and EIRP is specified when the operating frequency is greater than 1 GHz. Both are determined by adding the transmit antenna gain to the conducted RF output power with the primary difference between the two being that when determining the ERP, the transmit antenna gain is referenced to a dipole antenna (i.e., dBd) whereas when determining the EIRP, the transmit antenna gain is referenced to an isotropic antenna (dBi).

Final measurement calculation as below:

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:
ERP/EIRP = PMeas + GT − LC

where:
ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);

PMeas = measured transmitter output power or PSD, in dBm or dBW; GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP); dBd (ERP)=dBi (EIRP) -2.15 dB
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

For example:
In the EIRP test, when PMeas value for GSM1900 is 30.2 dBm, LC is 0.6 dB, and GT is -3.4 dB, then final EIRP value is:
EIRP for GSM1900 = 30.2 dBm - 3.4 dBi - 0.6 dB = 26.2 dBm

The relevant equation for determining the ERP/EIRP from the radiated RF output power is:

ERP/EIRP (dBm) = SA Read Value (dBm) + Correction Factor (dB)

where:
ERP/EIRP = effective or equivalent radiated power, in dBm;
SA Read Value = measured transmitter power received by EMI receiver or spectrum analyzer, in dBm;
Correction Factor = total correction factor including cable loss, in dB;

During the test, the data of Correction Factor (dB) is added in the EMI receiver or spectrum analyzer, so SA Read Value (dBm) is the final values which contains the data of Correction Factor (dB).

For example:

In the ERP test, when SA read value for GSM850 is 21dBm, and correction factor is 8dB, then final ERP value for GSM850 is:
ERP (dBm) = 21dBm + 8dB = 29dBm

5.1.4 Test Result

Please refer to the appendix report

5.2 Peak to Average Ratio

5.2.1 Limit

FCC § 2.1046 & 24.232(d) & 27.50(d); RSS-130 4.6.1, RSS-133 6.4, RSS-139 6.5, RSS199 4.4

In addition, when the transmitter power is measured in terms of average value, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

According to FCC section 24.232(d); RSS-133 6.4, power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with 24.232 (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

FCC section 24.232(e)); RSS-133 6.4,, peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

According to FCC section 27.50(d) (5); RSS-139 6.5, in measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

According to RSS-19 4.4, In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of
continuous transmission.

5.2.2 Test Setup

The section 4.5 test setup 5 description is used for conducted test, and the test setup description is used for radiated test. The photo of test setup please refer to Appendix I Test Setup Photos

5.2.3 Test Procedure

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.
According to KDB 971168 D01, there is CCDF procedure for PAPR:

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

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

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

d) Set the measurement interval as follows:

1)for continuous transmissions, set to 1 ms,

2)for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.

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

Alternate procedure for PAPR:

Use one of the procedures presented in 4.1 to measure the total peak power and record as PPk. Use one of the applicable procedures presented 4.2 to measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

PAPR (dB) = PPk (dBm) - PAvg (dBm).

5.2.4 Test Result

Please refer to the appendix report

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5.3 Occupied Bandwidth

5.3.1 Limit

FCC § 2.1049, RSS-Gen 6.7
The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Many of the individual rule parts specify a relative OBW in lieu of the 99% OBW. In such cases, the OBW is defined as the width of the signal between two points, one below the carrier center frequency and on above the carrier center frequency, outside of which all emissions are attenuated by at least X dB below the transmitter power, where the value of X is typically specified as 26.

5.3.2 Test Setup

The section 4.5 test setup 5 description is used for conducted test, and the test setup description is used for radiated test. The photo of test setup please refer to Appendix I Test Setup Photos

5.3.3 Test Procedure

The following procedure shall be used for measuring power bandwidth.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the anticipated OBW).

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.

d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.

e) For -26 dB OBW, the dynamic range of the spectrum analyzer at the selected RBW shall be at least 10dB below the target “-X dB down” requirement, e.g. -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be 36dB below the reference value.

f) Set the detection mode to peak, and the trace mode to max hold.

g) For 99% OBW, use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.
If the instrument does not have a 99 % power bandwidth function, the trace data points are to be recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99 % power bandwidth is the difference between these two frequencies.

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h) For -26 dB OBW, determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
Determine the "-X dB down amplitude" as equal to (reference value -X). Alternatively, this calculation can be performed by the analyzer by using the marker-delta function.
Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below "-X dB down amplitude" determined in step g). If a marker is below this "-X dB down amplitude" value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.

i) The OBW shall be reported by providing plot(s) of the measuring instrument display. The frequency and amplitude axes and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

j) Change variable modulations, coding, or channel bandwidth settings, then repeat above test procedures.

5.3.4 Test Result

Please refer to the appendix report

5.4 Frequency Stability

5.4.1 Limit

FCC § 2.1055 & 22.355 & 24.235 & 27.54 & 90.213; RSS-130 4.5, RSS-132 5.3, RSS-133 6.3, RSS-139 6.4, RSS199 4.3

The frequency stability shall be measured with variation of ambient temperature as follows:

(1) The temperature is varied from -30°C to +50°C.
(2) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10°C through the range.

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 carried battery equipment.
(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating and point which shall be specified by the manufacture.
(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

FCC § 22.355, RSS-132 5.3

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1—Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

FCC § 24.235, RSS-133 6.3

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

FCC § 27.54, RSS-139 6.4

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.
FCC § 90.213, RSS199 4.3

The frequency stability shall not depart from the reference frequency in excess of ±2.5ppm for mobile stations.

5.4.2 Test Setup

The section 4.5 test setup 6 description is used for conducted test, and the test setup description is used for radiated test. The photo of test setup please refer to Appendix I Test Setup Photos

5.4.3 Test Procedure

1. The EUT is placed in a temperature chamber.

2. The temperature is set to 25°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured.

3. The temperature is increased by not more than 10 degrees, allowed to stabilize and soak, and then repeat the frequency error measurement.

4. Repeat procedure 3 until +50°C and -30°C is reached.

5. Change supply voltage, and repeat measurement until extreme voltage is reached.

5.4.4 Test Result

Please refer to the appendix report

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5.5 Spurious Emission at Antenna Terminals

5.5.1 Limit

FCC § 2.1051 & 22.917(a) & 24.238(a) & 27.53(a) & 27.53(c) & 27.53(f) & 27.53(g) & 27.53(h) & 27.53(m) & 90.691 & 90.543; RSS-130 4.7, RSS-132 5.5, RSS-133 6.5, RSS-139 6.6, RSS199 4.5

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC § 22.917(a) & 24.238(a), RSS-132 5.5, RSS-133 6.5

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. This is calculated to be -13 dBm.

FCC § 27.53(a) (4), RSS-139 6.6

For mobile and portable stations operating in the 2305-2315MHz and 2350-2360MHz bands:

(1) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320MHz and on all frequencies between 2345 and 2360MHz that are outside the licensed band(s) of operation, not less than 55 +
10 log (P) dB on all frequencies between 2320 and 2324MHz and on all frequencies between 2341 and 2345MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328MHz and on all frequencies between 2337 and 2341MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337MHz.
(2) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292MHz, and 70 + 10 log (P) dB below 2288MHz.
(3) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365MHz, and not less than 70 + 10 log (P) dB above 2365MHz.

FCC § 27.53(c), RSS-139 6.6

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a
6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a
6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(f) , RSS-139 6.6

For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to - 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and
-80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC § 27.53(g) , RSS-139 6.6

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10*log(P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1) , RSS-139 6.6

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands,
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.

FCC § 27.53(m) (4) , RSS-139 6.6
For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

- 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.
- 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

- 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or

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EBS licensees.

FCC § 90.691

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

FCC § 90.543

(e) For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee’s frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559– 1610 MHz shall be limited to -70 dBW/ MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

RSS199 4.5

(a) for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 log10 p.

(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

(i) 40 + 10 log10 p from the channel edges to 5 MHz away

(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and

(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

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In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

5.5.2 Test Setup

The section 4.5 test setup 5 description is used for conducted test, and the test setup description is used for radiated test. The photo of test setup please refer to Appendix I Test Setup Photos

5.5.3 Test Procedure

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency blocks a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

CMW500 is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power.

The RF output of the transmitter is connected to the input of the spectrum analyzer through sufficient attenuation.

Spurious emissions are tested with 0.001MHz RBW for frequency less than 150kHz, 0.01MHz RBW for frequency less than 30MHz, 0.1MHz RBW for frequency less than 1GHz, and 1MHz RBW for frequency above 1GHz. And sweep point number are at least 401, referring to following formula.

Sweep point number = Span/RBW VBW=3*RBW

Detector Mode=mean or average power

Record the frequencies and levels of spurious emissions.

5.5.4 Test Result

Please refer to the appendix report

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5.6 Band Edge Emission

5.6.1 Limit

FCC § 2.1051 & 22.917(a) & 24.238(a) & 27.53(a) & 27.53(c) & 27.53(g) & 27.53(h) & 27.53(m) & 90.691& 90.543; RSS-130 4.7, RSS-132 5.5, RSS-133 6.5, RSS-139 6.6, RSS199 4.5

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC § 22.917(a) & 24.238(a), RSS-132 5.5, RSS-133 6.5

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. This is calculated to be -13 dBm.

FCC § 27.53(a) (4), RSS-139 6.6

For mobile and portable stations operating in the 2305-2315MHz and 2350-2360MHz bands:

(1) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320MHz and on all frequencies between 2345 and 2360MHz that are outside the licensed band(s) of operation, not less than 55 +
10 log (P) dB on all frequencies between 2320 and 2324MHz and on all frequencies between 2341 and 2345MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328MHz and on all frequencies between 2337 and 2341MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337MHz.

(2) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292MHz, and 70 + 10 log (P) dB below 2288MHz.

(3) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365MHz, and not less than 70 + 10 log (P) dB above 2365MHz.

FCC § 27.53(c), RSS-139 6.6

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a
6.25Hz band segment, for base and fixed stations;

(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25kHz band segment, for mobile and portable stations;
(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.

However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(g), RSS-139 6.6

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10*log(P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1), RSS-139 6.6

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands,
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.

FCC § 27.53(m) (4), RSS-139 6.6

For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

- 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.
- 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

- 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 90.691

(a) Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.
(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

FCC § 90.543

(e) For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.
(2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.
(3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.
(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

RSS199 4.5

(a) for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 log10 p.
(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

5.6.2 Test Setup

The section 4.5 test setup 5 description is used for conducted test, and the test setup description is used for radiated test. The photo of test setup please refer to Appendix I Test Setup Photos

5.6.3 Test Procedure

The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.

1. The EUT is coupled to the system simulator and spectrum analyzer; the RF load attached to EUT antenna
   terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

2. CMW500 is used to establish communication with the EUT, and its parameters are set to force the EUT transmitting at maximum output power.
3. The RF output of the transmitter is connected to the input of the spectrum analyzer through sufficient attenuation.
4. The center of the spectrum analyzer was set to block edge frequency.
5. Band edge are tested with 1%*cBW (RBW), and sweep point number referred to following formula. Sweep point number = 2*Span/RBW VBW=3RBW
6. Record the frequencies and levels of spurious emissions.

For mobile and portable stations, on all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment. Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance. By using a 10 kHz bandwidth on the spectrum analyzer.

10*log(10 kHz / 6.25 kHz) = 2.04 dB
Limit Line = -35 dBm + 2.04 dB = -32.96dBm

5.6.4 Test Result

Please refer to the appendix report

5.7 Field Strength of Spurious Radiation

5.7.1 Limit

FCC § 2.1053 & 22.917(a) & 24.238(a) & 27.53(a) & 27.53(c) & 27.53(f) & 27.53(g) & 27.53(h) & 27.53(m) & 90.691& 90.543 ; RSS-130 4.7, RSS-132 5.5, RSS-133 6.5, RSS-139 6.6, RSS199 4.5

FCC § 22.917(a) & 24.238(a)

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. This is calculated to be -13 dBm.

FCC § 27.53(a) (4), RSS-139 6.6

For mobile and portable stations operating in the 2305-2315MHz and 2350-2360MHz bands:

(1) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320MHz and on all frequencies between 2345 and 2360MHz that are outside the licensed band(s) of operation, not less than 55 +
10 log (P) dB on all frequencies between 2320 and 2324MHz and on all frequencies between 2341 and 2345MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328MHz and on all frequencies between 2337 and 2341MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337MHz.

(2) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292MHz, and 70 + 10 log (P) dB below 2288MHz.

(3) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365MHz, and not less than 70 + 10 log (P) dB above 2365MHz.

FCC § 27.53(c), RSS-139 6.6

For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a
6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a
6.25 kHz band segment, for mobile and portable stations;
(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater.
However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of

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measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC § 27.53(f), RSS-139 6.6

For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to - 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and
-80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC § 27.53(g), RSS-139 6.6

For operations in the 600MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43+10*log(P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC § 27.53(h) (1), RSS-139 6.6

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands,
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. FCC § 27.53(m) (4)
For mobile digital stations (BRS and EBS stations), the attenuation factor shall be not less than:

- 40+10logP dB (−10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge.
- 43+10logP dB (−13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge,

- 55+10logP dB (−25 dBm, 3 nW) on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz or the actual emission bandwidth (26 dB).

In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FCC § 90.691

(a) Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:
(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116

Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.
(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

FCC § 90.543

(e) For operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.
(2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.
(3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.
(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

RSS199 4.5

(a) for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 log10 p.
(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

5.7.2 Test Setup

The section 4.5 test setup 4 description is used for conducted test, and the test setup description is used for radiated test. The photo of test setup please refer to Appendix I Test Setup Photos

5.7.3 Test Procedure

1. On a test site, the EUT shall be placed at 80cm height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. During the measurement of the EUT, the resolution bandwidth was to 1 MHz and the average bandwidth was set to 1 MHz.
5. The transmitter shall be switched on; the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
9. The maximum signal level detected by the measuring receiver shall be noted.

10. The EUT was replaced by half-wave dipole (824 ~ 849 MHz) or horn antenna (1 850 ~ 1 910 MHz) connected to a signal generator.
11. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
12. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
13. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
14. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
15. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

Final measurement calculation as below:

The relevant equation for determining the ERP/EIRP from the radiated RF output power is: ERP/EIRP (dBm) = SA Read Value (dBm) + Correction Factor (dB)

where:
ERP/EIRP = effective or equivalent radiated power, in dBm;
SA Read Value = measured transmitter power received by EMI receiver or spectrum analyzer, in dBm;
Correction Factor = total correction factor including cable loss, in dB;

During the test, the data of Correction Factor (dB) is added in the EMI receiver or spectrum analyzer, so SA Read Value (dBm) is the final values which contains the data of Correction Factor (dB).

For example:

In the ERP test, when SA read value for GSM850 is 21dBm, and correction factor is 8dB, then final ERP value for GSM850 is:
ERP (dBm) = 21dBm + 8dB = 29dBm

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5.7.4 Test Result

Note1:.It was found that the emission value below 1GHz and above 18GHz was below the limit of 20dB, so it was recorded in the report.

Note2: For all bandwidths of LTE frequency band, modulation types and RB configurations were pretested, and it was found that minimum bandwidths, QPSK modulation and 1RB0 were the worst modes, and only the worst modes were reflected in the report.

Temperature	22.5℃	Humidity	56%
Test voltage	DC 3.85V	Test Engineer	Sean He

GSM 850 Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1648.40	-55.55	0.85	-54.70	-13.00	-41.70	Horizontal
2472.60	-57.83	6.85	-50.98	-13.00	-37.98	Horizontal
3296.80	-56.64	2.90	-53.74	-13.00	-40.74	Horizontal
1648.40	-55.67	2.87	-52.80	-13.00	-39.80	Vertical
2472.60	-56.61	2.51	-54.10	-13.00	-41.10	Vertical
3296.80	-58.84	9.43	-49.41	-13.00	-36.41	Vertical
Middle channel						
1673.20	-54.93	8.37	-46.56	-13.00	-33.56	Horizontal
2509.80	-56.80	6.06	-50.74	-13.00	-37.74	Horizontal
3346.40	-58.92	4.54	-54.38	-13.00	-41.38	Horizontal
1673.20	-58.72	0.85	-57.87	-13.00	-44.87	Vertical
2509.80	-61.00	6.85	-54.15	-13.00	-41.15	Vertical
3346.40	-62.01	9.43	-52.58	-13.00	-39.58	Vertical
Highest channel						
1697.60	-54.47	9.43	-45.04	-13.00	-32.04	Horizontal
2546.40	-55.34	8.36	-46.98	-13.00	-33.98	Horizontal
3395.20	-59.65	5.12	-54.53	-13.00	-41.53	Horizontal
1697.60	-59.33	2.65	-56.68	-13.00	-43.68	Vertical
2546.40	-58.92	0.52	-58.40	-13.00	-45.40	Vertical
3395.20	-62.65	7.59	-55.06	-13.00	-42.06	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. Margin=Level-Limit=Reading Level+Factor-Limit

PCS 1900						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3700.40	-64.07	16.94	-47.13	-13.00	-34.13	Horizontal
5550.60	-70.19	22.33	-47.86	-13.00	-34.86	Horizontal
7400.80	-62.03	15.79	-46.24	-13.00	-33.24	Horizontal
3700.40	-61.24	9.20	-52.04	-13.00	-39.04	Vertical
5550.60	-62.64	16.31	-46.33	-13.00	-33.33	Vertical
7400.80	-58.98	2.91	-56.07	-13.00	-43.07	Vertical
Middle channel						
3760.00	-58.36	3.70	-54.66	-13.00	-41.66	Horizontal
5640.00	-58.60	1.53	-57.07	-13.00	-44.07	Horizontal
7520.00	-62.62	12.28	-50.34	-13.00	-37.34	Horizontal
3760.00	-65.00	21.64	-43.36	-13.00	-30.36	Vertical
5640.00	-59.36	4.84	-54.52	-13.00	-41.52	Vertical
7520.00	-56.52	6.33	-50.19	-13.00	-37.19	Vertical
Highest channel						
3819.60	-54.26	8.50	-45.76	-13.00	-32.76	Horizontal
5729.40	-58.57	3.47	-55.10	-13.00	-42.10	Horizontal
7639.20	-63.90	2.89	-61.01	-13.00	-48.01	Horizontal
3819.60	-62.64	16.31	-46.33	-13.00	-33.33	Vertical
5729.40	-70.28	27.41	-42.87	-13.00	-29.87	Vertical
7639.20	-62.33	8.15	-54.18	-13.00	-41.18	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. Margin=Level-Limit=Reading Level+Factor-Limit

WCDMA 850						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1652.80	-62.11	1.54	-60.57	-13.00	-47.57	Horizontal
2479.20	-62.89	4.25	-58.64	-13.00	-45.64	Horizontal
3305.60	-65.90	10.72	-55.18	-13.00	-42.18	Horizontal
1652.80	-70.43	21.00	-49.43	-13.00	-36.43	Vertical
2479.20	-67.38	16.01	-51.37	-13.00	-38.37	Vertical
3305.60	-61.76	0.27	-61.49	-13.00	-48.49	Vertical
Middle channel						
1673.20	-67.99	17.74	-50.25	-13.00	-37.25	Horizontal
2509.80	-62.29	2.33	-59.96	-13.00	-46.96	Horizontal
3346.40	-59.46	6.77	-52.69	-13.00	-39.69	Horizontal
1673.20	-63.58	2.88	-60.70	-13.00	-47.70	Vertical
2509.80	-62.97	5.32	-57.65	-13.00	-44.65	Vertical
3346.40	-62.14	2.67	-59.47	-13.00	-46.47	Vertical
Highest channel						
1693.20	-57.56	8.88	-48.68	-13.00	-35.68	Horizontal
2539.80	-58.75	7.97	-50.78	-13.00	-37.78	Horizontal
3386.40	-60.36	6.45	-53.91	-13.00	-40.91	Horizontal
1693.20	-62.09	4.94	-57.15	-13.00	-44.15	Vertical
2539.80	-61.05	4.54	-56.51	-13.00	-43.51	Vertical
3386.40	-62.22	3.37	-58.85	-13.00	-45.85	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. Margin=Level-Limit=Reading Level+Factor-Limit

WCDMA 1700						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3424.80	-59.73	2.79	-56.94	-13.00	-43.94	Horizontal
5137.20	-60.18	1.73	-58.45	-13.00	-45.45	Horizontal
6849.60	-61.02	1.05	-59.97	-13.00	-46.97	Horizontal
3424.80	-60.61	0.35	-60.26	-13.00	-47.26	Vertical
5137.20	-60.73	1.22	-59.51	-13.00	-46.51	Vertical
6849.60	-61.01	1.83	-59.18	-13.00	-46.18	Vertical
Middle channel						
3465.20	-60.93	2.46	-58.47	-13.00	-45.47	Horizontal
5197.80	-60.98	2.90	-58.08	-13.00	-45.08	Horizontal
6930.40	-62.13	3.36	-58.77	-13.00	-45.77	Horizontal
3465.20	-62.22	6.14	-56.08	-13.00	-43.08	Vertical
5197.80	-61.54	8.24	-53.30	-13.00	-40.30	Vertical
6930.40	-62.27	11.97	-50.30	-13.00	-37.30	Vertical
Highest channel						
3505.20	-64.33	16.22	-48.11	-13.00	-35.11	Horizontal
5257.80	-64.84	17.76	-47.08	-13.00	-34.08	Horizontal
7010.40	-65.60	18.73	-46.87	-13.00	-33.87	Horizontal
3505.20	-67.58	21.58	-46.00	-13.00	-33.00	Vertical
5257.80	-72.64	28.14	-44.50	-13.00	-31.50	Vertical
7010.40	-63.95	15.39	-48.56	-13.00	-35.56	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. Margin=Level-Limit=Reading Level+Factor-Limit

WCDMA 1900						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3704.80	-54.40	8.90	-45.50	-13.00	-32.50	Horizontal
5557.20	-58.47	7.02	-51.45	-13.00	-38.45	Horizontal
7409.60	-58.83	5.49	-53.34	-13.00	-40.34	Horizontal
3704.80	-60.54	4.82	-55.72	-13.00	-42.72	Vertical
5557.20	-58.65	3.31	-55.34	-13.00	-42.34	Vertical
7409.60	-59.54	0.78	-58.76	-13.00	-45.76	Vertical
Middle channel						
3760.00	-59.66	2.70	-56.96	-13.00	-43.96	Horizontal
5640.00	-59.99	3.86	-56.13	-13.00	-43.13	Horizontal
7520.00	-60.03	1.86	-58.17	-13.00	-45.17	Horizontal
3760.00	-60.50	1.37	-59.13	-13.00	-46.13	Vertical
5640.00	-64.41	12.46	-51.95	-13.00	-38.95	Vertical
7520.00	-62.08	2.88	-59.20	-13.00	-46.20	Vertical
Highest channel						
3815.20	-63.34	9.01	-54.33	-13.00	-41.33	Horizontal
5722.80	-62.62	13.65	-48.97	-13.00	-35.97	Horizontal
7630.40	-63.54	17.56	-45.98	-13.00	-32.98	Horizontal
3815.20	-66.13	20.68	-45.45	-13.00	-32.45	Vertical
5722.80	-70.87	22.38	-48.49	-13.00	-35.49	Vertical
7630.40	-64.10	15.42	-48.68	-13.00	-35.68	Vertical

Remark:

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2. Margin=Level-Limit=Reading Level+Factor-Limit

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LTE Band 2, 1.4MHz Bandwidth Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3720.00	-65.09	18.27	-46.82	-13.00	-33.82	Horizontal
5580.00	-62.67	13.00	-49.67	-13.00	-36.67	Horizontal
7440.00	-62.43	15.64	-46.79	-13.00	-33.79	Horizontal
3720.00	-65.73	16.12	-49.61	-13.00	-36.61	Vertical
5580.00	-64.59	17.76	-46.83	-13.00	-33.83	Vertical
7440.00	-72.16	27.22	-44.94	-13.00	-31.94	Vertical
Middle channel						
3760.00	-56.69	8.21	-48.48	-13.00	-35.48	Horizontal
5640.00	-54.31	9.55	-44.76	-13.00	-31.76	Horizontal
7520.00	-54.48	9.86	-44.62	-13.00	-31.62	Horizontal
3760.00	-55.62	9.00	-46.62	-13.00	-33.62	Vertical
5640.00	-57.42	7.42	-50.00	-13.00	-37.00	Vertical
7520.00	-60.60	4.58	-56.02	-13.00	-43.02	Vertical
Highest channel						
3800.00	-59.43	6.29	-53.14	-13.00	-40.14	Horizontal
5700.00	-59.20	5.49	-53.71	-13.00	-40.71	Horizontal
7600.00	-59.90	5.12	-54.78	-13.00	-41.78	Horizontal
3800.00	-60.09	2.60	-57.49	-13.00	-44.49	Vertical
5700.00	-61.03	3.27	-57.76	-13.00	-44.76	Vertical
7600.00	-60.06	3.85	-56.21	-13.00	-43.21	Vertical

Remark:

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LTE Band 4, 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3440.00	-59.62	1.58	-58.04	-13.00	-45.04	Horizontal
5160.00	-59.59	1.81	-57.78	-13.00	-44.78	Horizontal
6880.00	-60.03	1.18	-58.85	-13.00	-45.85	Horizontal
3440.00	-59.24	2.08	-57.16	-13.00	-44.16	Vertical
5160.00	-59.20	0.16	-59.04	-13.00	-46.04	Vertical
6880.00	-61.55	2.87	-58.68	-13.00	-45.68	Vertical
Middle channel						
3465.00	-60.39	2.14	-58.25	-13.00	-45.25	Horizontal
5197.50	-62.97	7.23	-55.74	-13.00	-42.74	Horizontal
6930.00	-60.31	4.89	-55.42	-13.00	-42.42	Horizontal
3465.00	-60.16	3.33	-56.83	-13.00	-43.83	Vertical
5197.50	-63.13	2.91	-60.22	-13.00	-47.22	Vertical
6930.00	-62.27	8.38	-53.89	-13.00	-40.89	Vertical
Highest channel						
3490.00	-63.19	8.29	-54.90	-13.00	-41.90	Horizontal
5235.00	-63.98	12.28	-51.70	-13.00	-38.70	Horizontal
6980.00	-62.93	9.95	-52.98	-13.00	-39.98	Horizontal
3490.00	-63.38	16.06	-47.32	-13.00	-34.32	Vertical
5235.00	-67.03	17.82	-49.21	-13.00	-36.21	Vertical
6980.00	-63.63	16.27	-47.36	-13.00	-34.36	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. Margin=Level-Limit=Reading Level+Factor-Limit

LTE Band 5, 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1658.00	-55.49	9.48	-46.01	-13.00	-33.01	Horizontal
2487.00	-56.94	8.57	-48.37	-13.00	-35.37	Horizontal
3316.00	-58.00	6.87	-51.13	-13.00	-38.13	Horizontal
1658.00	-60.47	3.15	-57.32	-13.00	-44.32	Vertical
2487.00	-55.87	7.83	-48.04	-13.00	-35.04	Vertical
3316.00	-54.84	9.21	-45.63	-13.00	-32.63	Vertical
Middle channel						
1673.00	-57.34	6.06	-51.28	-13.00	-38.28	Horizontal
2509.50	-60.44	4.75	-55.69	-13.00	-42.69	Horizontal
3346.00	-58.78	5.33	-53.45	-13.00	-40.45	Horizontal
1673.00	-59.20	3.71	-55.49	-13.00	-42.49	Vertical
2509.50	-60.55	2.67	-57.88	-13.00	-44.88	Vertical
3346.00	-60.90	2.14	-58.76	-13.00	-45.76	Vertical
Highest channel						
1688.00	-61.24	1.59	-59.65	-13.00	-46.65	Horizontal
2532.00	-63.91	8.02	-55.89	-13.00	-42.89	Horizontal
3376.00	-61.84	4.92	-56.92	-13.00	-43.92	Horizontal
1688.00	-66.25	2.89	-63.36	-13.00	-50.36	Vertical
2532.00	-62.36	15.00	-47.36	-13.00	-34.36	Vertical
3376.00	-62.59	10.04	-52.55	-13.00	-39.55	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. Margin=Level-Limit=Reading Level+Factor-Limit

LTE Band 12, 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1408.00	-54.50	9.32	-45.18	-13.00	-32.18	Horizontal
2112.00	-56.91	7.88	-49.03	-13.00	-36.03	Horizontal
2816.00	-61.05	3.80	-57.25	-13.00	-44.25	Horizontal
1408.00	-61.09	1.09	-60.00	-13.00	-47.00	Vertical
2112.00	-59.67	5.99	-53.68	-13.00	-40.68	Vertical
2816.00	-60.35	2.90	-57.45	-13.00	-44.45	Vertical
Middle channel						
1415.00	-60.68	1.49	-59.19	-13.00	-46.19	Horizontal
2122.50	-60.95	1.53	-59.42	-13.00	-46.42	Horizontal
2830.00	-62.55	9.43	-53.12	-13.00	-40.12	Horizontal
1415.00	-63.27	6.89	-56.38	-13.00	-43.38	Vertical
2122.50	-62.87	8.28	-54.59	-13.00	-41.59	Vertical
2830.00	-63.41	15.14	-48.27	-13.00	-35.27	Vertical
Highest channel						
1422.00	-65.18	17.25	-47.93	-13.00	-34.93	Horizontal
2133.00	-63.74	13.14	-50.60	-13.00	-37.60	Horizontal
2844.00	-64.48	15.94	-48.54	-13.00	-35.54	Horizontal
1422.00	-69.38	21.83	-47.55	-13.00	-34.55	Vertical
2133.00	-66.06	18.79	-47.27	-13.00	-34.27	Vertical
2844.00	-62.84	11.00	-51.84	-13.00	-38.84	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. Margin=Level-Limit=Reading Level+Factor-Limit

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LTE Band 13, 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1559.00	-63.37	11.15	-52.22	-40.00	-12.22	Horizontal
2338.50	-63.84	8.29	-55.55	-13.00	-42.55	Horizontal
3118.00	-62.48	4.37	-58.11	-13.00	-45.11	Horizontal
1559.00	-62.52	15.32	-47.20	-40.00	-7.20	Vertical
2338.50	-64.49	18.30	-46.19	-13.00	-33.19	Vertical
3118.00	-70.83	22.22	-48.61	-13.00	-35.61	Vertical
Middle channel						
1564.00	-64.20	16.36	-47.84	-40.00	-7.84	Horizontal
2346.00	-63.51	10.41	-53.10	-13.00	-40.10	Horizontal
3128.00	-63.57	9.63	-53.94	-13.00	-40.94	Horizontal
1564.00	-63.49	14.70	-48.79	-40.00	-8.79	Vertical
2346.00	-64.47	15.46	-49.01	-13.00	-36.01	Vertical
3128.00	-62.33	6.20	-56.13	-13.00	-43.13	Vertical
Highest channel						
1569.00	-61.13	2.72	-58.41	-40.00	-18.41	Horizontal
2353.50	-59.63	0.44	-59.19	-13.00	-46.19	Horizontal
3138.00	-60.66	2.25	-58.41	-13.00	-45.41	Horizontal
1569.00	-60.57	1.15	-59.42	-40.00	-19.42	Vertical
2353.50	-62.45	2.91	-59.54	-13.00	-46.54	Vertical
3138.00	-66.27	17.71	-48.56	-13.00	-35.56	Vertical

Remark:

1. *The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.*
2. *Margin=Level-Limit=Reading Level+Factor-Limit*

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LTE Band 14, 1.4MHz Bandwidth Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1581.00	-53.99	9.74	-44.25	-13.00	-31.25	Horizontal
2371.50	-54.19	9.43	-44.76	-13.00	-31.76	Horizontal
3162.00	-57.55	7.13	-50.42	-13.00	-37.42	Horizontal
1581.00	-59.82	4.00	-55.82	-13.00	-42.82	Vertical
2371.50	-59.28	5.25	-54.03	-13.00	-41.03	Vertical
3162.00	-58.99	1.82	-57.17	-13.00	-44.17	Vertical
Middle channel						
1586.00	-60.34	3.43	-56.91	-13.00	-43.91	Horizontal
2379.00	-62.90	11.63	-51.27	-13.00	-38.27	Horizontal
3172.00	-65.94	18.53	-47.41	-13.00	-34.41	Horizontal
1586.00	-62.92	13.14	-49.78	-13.00	-36.78	Vertical
2379.00	-62.04	15.32	-46.72	-13.00	-33.72	Vertical
3172.00	-65.60	16.94	-48.66	-13.00	-35.66	Vertical
Highest channel						
1591.00	-63.00	8.27	-54.73	-13.00	-41.73	Horizontal
2386.50	-63.03	10.41	-52.62	-13.00	-39.62	Horizontal
3182.00	-59.44	0.45	-58.99	-13.00	-45.99	Horizontal
1591.00	-60.23	1.83	-58.40	-13.00	-45.40	Vertical
2386.50	-69.98	22.64	-47.34	-13.00	-34.34	Vertical
3182.00	-63.83	21.19	-42.64	-13.00	-29.64	Vertical

Remark:

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4. *Margin=Level-Limit=Reading Level+Factor-Limit*

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LTE Band 17, 5MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1418.00	-59.47	1.15	-58.32	-13.00	-45.32	Horizontal
2127.00	-59.14	1.81	-57.33	-13.00	-44.33	Horizontal
2836.00	-64.81	2.89	-61.92	-13.00	-48.92	Horizontal
1418.00	-59.49	2.19	-57.30	-13.00	-44.30	Vertical
2127.00	-61.61	7.55	-54.06	-13.00	-41.06	Vertical
2836.00	-59.84	3.63	-56.21	-13.00	-43.21	Vertical
Middle channel						
1420.00	-61.42	12.70	-48.72	-13.00	-35.72	Horizontal
2130.00	-60.94	5.21	-55.73	-13.00	-42.73	Horizontal
2840.00	-64.35	16.01	-48.34	-13.00	-35.34	Horizontal
1420.00	-65.24	19.77	-45.47	-13.00	-32.47	Vertical
2130.00	-64.30	17.29	-47.01	-13.00	-34.01	Vertical
2840.00	-63.64	16.38	-47.26	-13.00	-34.26	Vertical
Highest channel						
1422.00	-71.13	26.47	-44.66	-13.00	-31.66	Horizontal
2133.00	-67.68	22.45	-45.23	-13.00	-32.23	Horizontal
2844.00	-67.40	21.00	-46.40	-13.00	-33.40	Horizontal
1422.00	-63.20	9.89	-53.31	-13.00	-40.31	Vertical
2133.00	-63.47	8.29	-55.18	-13.00	-42.18	Vertical
2844.00	-61.35	11.57	-49.78	-13.00	-36.78	Vertical

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LTE Band 25, 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3720.00	-64.47	12.58	-51.89	-13.00	-38.89	Horizontal
5580.00	-65.15	9.58	-55.57	-13.00	-42.57	Horizontal
7440.00	-64.11	7.23	-56.88	-13.00	-43.88	Horizontal
3720.00	-61.58	2.27	-59.31	-13.00	-46.31	Vertical
5580.00	-59.97	5.29	-54.68	-13.00	-41.68	Vertical
7440.00	-60.02	2.65	-57.37	-13.00	-44.37	Vertical
Middle channel						
3765.00	-60.80	1.90	-58.90	-13.00	-45.90	Horizontal
5647.50	-63.16	8.22	-54.94	-13.00	-41.94	Horizontal
7530.00	-61.20	3.80	-57.40	-13.00	-44.40	Horizontal
3765.00	-59.13	6.71	-52.42	-13.00	-39.42	Vertical
5647.50	-59.61	4.54	-55.07	-13.00	-42.07	Vertical
7530.00	-60.47	2.92	-57.55	-13.00	-44.55	Vertical
Highest channel						
3810.00	-60.56	5.80	-54.76	-13.00	-41.76	Horizontal
5715.00	-62.52	2.88	-59.64	-13.00	-46.64	Horizontal
7620.00	-66.76	17.71	-49.05	-13.00	-36.05	Horizontal
3810.00	-64.60	16.14	-48.46	-13.00	-35.46	Vertical
5715.00	-64.77	16.27	-48.50	-13.00	-35.50	Vertical
7620.00	-69.58	22.25	-47.33	-13.00	-34.33	Vertical

Remark:

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LTE Band 26(for Part 22H), 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1649.40	-60.85	2.44	-58.41	-13.00	-45.41	Vertical
1649.40	-60.97	3.92	-57.05	-13.00	-44.05	Horizontal
2474.10	-60.67	1.54	-59.13	-13.00	-46.13	Vertical
2474.10	-60.80	3.38	-57.42	-13.00	-44.42	Horizontal
3298.80	-64.00	2.91	-61.09	-13.00	-48.09	Vertical
3298.80	-60.89	1.81	-59.08	-13.00	-46.08	Horizontal
Middle channel						
1673.00	-62.69	2.87	-59.82	-13.00	-46.82	Vertical
1673.00	-59.86	0.39	-59.47	-13.00	-46.47	Horizontal
2509.50	-63.34	7.59	-55.75	-13.00	-42.75	Vertical
2509.50	-63.82	11.30	-52.52	-13.00	-39.52	Horizontal
3346.00	-62.22	4.68	-57.54	-13.00	-44.54	Vertical
3346.00	-62.22	6.03	-56.19	-13.00	-43.19	Horizontal
Highest channel						
1696.60	-61.84	3.51	-58.33	-13.00	-45.33	Vertical
1696.60	-64.67	8.92	-55.75	-13.00	-42.75	Horizontal
2544.90	-63.51	8.23	-55.28	-13.00	-42.28	Vertical
2544.90	-64.57	8.30	-56.27	-13.00	-43.27	Horizontal
3393.20	-64.28	15.32	-48.96	-13.00	-35.96	Vertical
3393.20	-63.98	14.70	-49.28	-13.00	-36.28	Horizontal

Remark:

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LTE Band 26(for Part 90S), 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1629.40	-61.63	11.97	-49.66	-13.00	-36.66	Vertical
1629.40	-63.97	8.28	-55.69	-13.00	-42.69	Horizontal
2444.10	-62.24	9.29	-52.95	-13.00	-39.95	Vertical
2444.10	-58.58	0.85	-57.73	-13.00	-44.73	Horizontal
3258.80	-61.26	2.91	-58.35	-13.00	-45.35	Vertical
3258.80	-60.71	0.96	-59.75	-13.00	-46.75	Horizontal
Middle channel						
1638.00	-61.10	2.38	-58.72	-13.00	-45.72	Vertical
1638.00	-60.38	1.63	-58.75	-13.00	-45.75	Horizontal
2457.00	-64.96	18.73	-46.23	-13.00	-33.23	Vertical
2457.00	-65.39	27.61	-37.78	-13.00	-24.78	Horizontal
3276.00	-72.60	24.98	-47.62	-13.00	-34.62	Vertical
3276.00	-66.20	17.04	-49.16	-13.00	-36.16	Horizontal
Highest channel						
1646.60	-65.52	15.39	-50.13	-13.00	-37.13	Vertical
1646.60	-65.11	16.01	-49.10	-13.00	-36.10	Horizontal
2469.90	-65.96	18.42	-47.54	-13.00	-34.54	Vertical
2469.90	-70.71	22.72	-47.99	-13.00	-34.99	Horizontal
3293.20	-66.94	21.58	-45.36	-13.00	-32.36	Vertical
3293.20	-71.13	21.58	-49.55	-13.00	-36.55	Horizontal

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LTE Band 66, 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3440.00	-59.21	5.54	-53.67	-13.00	-40.67	Horizontal
5160.00	-60.62	2.08	-58.54	-13.00	-45.54	Horizontal
6880.00	-61.90	8.22	-53.68	-13.00	-40.68	Horizontal
3440.00	-67.34	17.87	-49.47	-13.00	-36.47	Vertical
5160.00	-69.82	22.25	-47.57	-13.00	-34.57	Vertical
6880.00	-65.25	16.30	-48.95	-13.00	-35.95	Vertical
Middle channel						
3490.00	-64.24	13.84	-50.40	-13.00	-37.40	Horizontal
5235.00	-61.72	2.91	-58.81	-13.00	-45.81	Horizontal
6980.00	-61.04	0.24	-60.80	-13.00	-47.80	Horizontal
3490.00	-61.60	4.08	-57.52	-13.00	-44.52	Vertical
5235.00	-60.20	2.95	-57.25	-13.00	-44.25	Vertical
6980.00	-65.39	8.30	-57.09	-13.00	-44.09	Vertical
Highest channel						
3558.60	-62.86	6.62	-56.24	-13.00	-43.24	Horizontal
5337.90	-64.21	12.83	-51.38	-13.00	-38.38	Horizontal
7117.20	-62.70	11.97	-50.73	-13.00	-37.73	Horizontal
3558.60	-75.68	24.13	-51.55	-13.00	-38.55	Vertical
5337.90	-70.08	20.89	-49.19	-13.00	-36.19	Vertical
7117.20	-63.66	15.34	-48.32	-13.00	-35.32	Vertical

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LTE Band 71, 1.4MHz Bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1346.00	-62.31	10.70	-51.61	-13.00	-38.61	Horizontal
2019.00	-63.96	8.15	-55.81	-13.00	-42.81	Horizontal
2692.00	-62.63	9.17	-53.46	-13.00	-40.46	Horizontal
1346.00	-63.28	15.90	-47.38	-13.00	-34.38	Vertical
2019.00	-66.02	17.84	-48.18	-13.00	-35.18	Vertical
2692.00	-70.08	22.64	-47.44	-13.00	-34.44	Vertical
Middle channel						
1361.00	-63.56	15.77	-47.79	-13.00	-34.79	Horizontal
2041.50	-62.69	13.18	-49.51	-13.00	-36.51	Horizontal
2722.00	-61.43	2.92	-58.51	-13.00	-45.51	Horizontal
1361.00	-60.66	5.32	-55.34	-13.00	-42.34	Vertical
2041.50	-62.55	6.89	-55.66	-13.00	-42.66	Vertical
2722.00	-61.06	2.38	-58.68	-13.00	-45.68	Vertical
Highest channel						
1376.00	-59.81	0.50	-59.31	-13.00	-46.31	Horizontal
2064.00	-62.04	2.89	-59.15	-13.00	-46.15	Horizontal
2752.00	-60.09	1.29	-58.80	-13.00	-45.80	Horizontal
1376.00	-65.00	21.24	-43.76	-13.00	-30.76	Vertical
2064.00	-65.26	20.01	-45.25	-13.00	-32.25	Vertical
2752.00	-62.09	15.29	-46.80	-13.00	-33.80	Vertical

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6 Test Setup Photos

Please refer to the Appendix I Test Setup Photos

7 EUT Constructional Details (EUT Photos)

Please refer to the Appendix II External Photos &Appendix III External Photos

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