

**CFR 47 FCC PART 2
CFR 47 FCC PART 22 H
CFR 47 FCC PART 27**

TEST REPORT

For

4G + Wi-Fi + BLE Stick

**MODEL NUMBER: ECS3-02, ECS4-02, ECS4-03, ECS4-05, ECS4-0A, ECS3-01,
ECS3-03, ECS3-04, ECS3-0C, ECS4-09, ECS3-05, ECS2-04, ECS2-0Q, ECS2-0W,
ECS2-0R, ECS2-0S, ECS2-0Y, ECS2-0T, ECS2-0X, ECS2-12, ECS2-0U, ECS2-10,
ECS2-0V, ECS2-13, ECS2-08, ECS2-09, ECS2-0A, ECS2-14, ECS1-04, ECS1-05,
ECS1-06, ECS1-0A, ECS4-01, ECS2-05, ECS2-06, ECS2-07, ECS1-02, ECMG-00,
ECMG-01, ECMG-02, ECMG-03, ECMG-04, ECGC-01, ECGC-02, ECGC-03,
ECGC-04, ECGC-05**

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Prepared for

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Prepared by

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**This report is based on a single evaluation of the submitted sample(s) of the above
mentioned product, it does not imply an assessment of the production of the products.**

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	September 30, 2025	Initial Issue	

Summary of Test Results(LTE Band 5)			
Standard(s) Section	Description	Requirements	Result
FCC			
§2.1046, §22.913(a)(5)	Effective (Isotropic) Radiated Power of Transmitter	$ERP \leq 7 \text{ W}$	PASS
§22.913	Peak to Average Ratio	Limit $\leq 13 \text{ dB}$	PASS
§2.1049	Occupied Bandwidth	OBW: No limit EBW: No limit	PASS
§2.1051, §22.917(b)(1)	Band Edge Compliance	$\leq 43 + 10 \log_{10}(P[W])/1\% \cdot E$ BW, in 1 MHz bands immediately outside and adjacent to the frequency block.	PASS
§2.1051, §22.917(a)	Spurious Emission at Antenna Terminal	$\leq 43 + 10 \log_{10}(P[W])/100$ kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	PASS
§2.1053, §22.917(a)	Radiated Spurious Emissions	$\leq 43 + 10 \log_{10}(P[W])$	PASS
§2.1055, §22.355	Frequency Stability	Within authorized bands of operation/frequency block.	PASS
Note: 1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China. 2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 22 > when <Accuracy Method> decision rule is applied.			

Summary of Test Results(LTE Band 7)			
Standard(s) Section	Description	Requirements	Result
FCC			
§2.1046, §27.50(h)	Effective (Isotropic) Radiated Power of Transmitter	$EIRP \leq 2\text{ W}$	PASS
§27.50	Peak to Average Ratio	Limit $\leq 13\text{ dB}$	PASS
§2.1049	Occupied Bandwidth	OBW: No limit EBW: No limit	PASS
§2.1051, §27.53(m)(4)	Band Edge Compliance	$\leq 43 + 10\log_{10}(P[W])/1\% \cdot E$ BW, in 1 MHz bands immediately outside and adjacent to the frequency block.	PASS
§2.1051, §27.53(m)(4)	Spurious Emission at Antenna Terminal	$\leq 43 + 10\log_{10}(P[W])/100$ kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	PASS
§2.1053, §27.53(m)(4)	Radiated Spurious Emissions	$\leq 55 + 10\log_{10}(P[W])$	PASS
§2.1055, §27.54	Frequency Stability	Within authorized bands of operation/frequency block.	PASS
Note: 1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China. 2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 27 > when <Accuracy Method> decision rule is applied.			

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Chengdu E-LINTER Information Technology Co., Ltd.
Address: No. 505, Building 6, Zone D, Tianfu Software Park, No. 599, Century City South Road, CDHT, Chengdu, Sichuan, China

Manufacturer Information

Company Name: Chengdu E-LINTER Information Technology Co., Ltd.
Address: No. 505, Building 6, Zone D, Tianfu Software Park, No. 599, Century City South Road, CDHT, Chengdu, Sichuan, China

EUT Information

EUT Name: 4G + Wi-Fi + BLE Stick
Model: ECS3-02
Series Model: ECS4-02, ECS4-03, ECS4-05, ECS4-0A, ECS3-01, ECS3-03, ECS3-04, ECS3-0C, ECS4-09, ECS3-05, ECS2-04, ECS2-0Q, ECS2-0W, ECS2-0R, ECS2-0S, ECS2-0Y, ECS2-0T, ECS2-0X, ECS2-12, ECS2-0U, ECS2-10, ECS2-0V, ECS2-13, ECS2-08, ECS2-09, ECS2-0A, ECS2-14, ECS1-04, ECS1-05, ECS1-06, ECS1-0A, ECS4-01, ECS2-05, ECS2-06, ECS2-07, ECS1-02, ECMG-00, ECMG-01, ECMG-02, ECMG-03, ECMG-04, ECGC-01, ECGC-02, ECGC-03, ECGC-04, ECGC-05
Brand:  E-LINTER
Sample Received Date: July 26, 2025
Sample Status: Normal
Sample ID: A25070051 019, A25070051 020
Date of Tested: July 26, 2025 to September 17, 2025

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 22 H	PASS
CFR 47 FCC PART 27	PASS

Prepared By:



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Project Engineer

Approved By:



Shawn Wen

Laboratory Manager

Checked By:



Alan He

Laboratory Leader

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26-2015, 971168 D01 Power Meas License Digital Systems v03r01, 971168 D02 Misc Rev Approv License Devices v02r01, 412172 D01 v01r01 Determining ERP and EIRP, CFR 47 FCC Part 2, Part 22 H, Part 27.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 6947.01) Guangdong Global Testing Technology Co., Ltd. has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1343) Guangdong Global Testing Technology Co., Ltd. has been recognized to perform compliance testing on equipment subject to Supplier's Declaration of Conformity (SDoC) and Certification rules ISED (Company No.: 30714) Guangdong Global Testing Technology Co., Ltd. has been registered and fully described in a report filed with ISED. The Company Number is 30714 and the test lab Conformity Assessment Body Identifier (CABID) is CN0148.
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Note: All tests measurement facilities use to collect the measurement data are located at Room 101-105, 203-210, Building 1, No.2, Keji 8 Road, Songshan Lake Park, Dongguan city, Guangdong, People's Republic of China, 523808

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Items	k	Uncertainty
Occupied Bandwidth	2	±0.3 dB
Effective (Isotropic) Radiated Power Output Data	2	±0.3 dB
Conducted Spurious Emission	2	9 kHz-1 GHz: ± 0.2 dB 1GHz-12.75GHz: ± 0.3 dB 12.75 GHz-26.5 GHz: ± 0.5dB
Frequency Stability	2	±9.0 PPM
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

Test Item	Frequency Range	k	U(dB)
Conducted emissions from the AC mains power ports (AMN)	150 kHz ~ 30 MHz	2	3.37
Radiated emissions	9 kHz ~ 30 MHz	2	4.16
Radiated emissions	30 MHz ~ 1 GHz	2	3.79
Radiated emissions	1 GHz ~ 18 GHz	2	5.62
Radiated emissions	18 GHz ~ 40 GHz	2	5.54
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.			

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name		4G + Wi-Fi + BLE Stick
Model		ECS3-02
Series Model		ECS4-02, ECS4-03, ECS4-05, ECS4-0A, ECS3-01, ECS3-03, ECS3-04, ECS3-0C, ECS4-09, ECS3-05, ECS2-04, ECS2-0Q, ECS2-0W, ECS2-0R, ECS2-0S, ECS2-0Y, ECS2-0T, ECS2-0X, ECS2-12, ECS2-0U, ECS2-10, ECS2-0V, ECS2-13, ECS2-08, ECS2-09, ECS2-0A, ECS2-14, ECS1-04, ECS1-05, ECS1-06, ECS1-0A, ECS4-01, ECS2-05, ECS2-06, ECS2-07, ECS1-02, ECMG-00, ECMG-01, ECMG-02, ECMG-03, ECMG-04, ECGC-01, ECGC-02, ECGC-03, ECGC-04, ECGC-05
Model difference		The difference of the models are model name and product connector, others are the same. The detailed information about the product connector can be found in the EUT photo.
Hardware Version		V1.0
Software Version		V1.0
Ratings		DC 5-16V
Power Supply	DC	12V
Type of Modulation		QPSK, 16QAM
Note		1. The Antenna Gain was provided by customer, and this information may affect the validity of the results, customer should be responsible for this.

5.2. TECHNICAL INFORMATION

E-UTRA Band	Characteristics				
	E-UTRA operating bands		Bandwidth		
	Transmit	Receive			
5	824MHz -849MHz	869MHz -894MHz	☒ 1.4MHz	☒ 3MHz	☒ 5MHz
			☒ 10MHz	☐ 15MHz	☐ 20MHz
7	2500MHz -2570MHz	2620MHz -2690MHz	☐ 1.4MHz	☐ 3MHz	☒ 5MHz
			☒ 10MHz	☒ 15MHz	☒ 20MHz

5.3. TEST CHANNEL CONFIGURATION

Band	Test Frequency ID	Bandwidth [MHz]	N _{UL}	Frequency of Uplink [MHz]	N _{DL}	Frequency of Downlink [MHz]
Band 5	Low Range	1.4	20407	824.7	2407	869.7
		3	20415	825.5	2415	870.5
		5	20425	826.5	2425	871.5
		10	20450	829	2450	874
	Mid Range	1.4/3/5/10	20525	836.5	2525	881.5
	High Range	1.4	20643	848.3	2643	893.3
		3	20635	847.5	2635	892.5
		5	20625	846.5	2625	891.5
		10	20600	844	2600	889

Band	Test Frequency ID	Bandwidth [MHz]	N _{UL}	Frequency of Uplink [MHz]	N _{DL}	Frequency of Downlink [MHz]
Band 7	Low Range	5	20775	2502.5	2775	2622.5
		10	20800	2505	2800	2625
		15	20825	2507.5	2825	2627.5
		20	20850	2510	2850	2630
	Mid Range	5/10/15/20	21100	2535	3100	2655
	High Range	5	21425	2567.5	3425	2687.5
		10	21400	2565	3400	2685
		15	21375	2562.5	3375	2682.5
		20	21350	2560	3350	2680

5.4. MAXIMUM AVERAGE OUTPUT POWER

LTE Band 5

Part 22H						
ERP Limit(W)		7.00				
Antenna Gain (dBi)		3.36				
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)
1.4	QPSK	824.7	848.3	22.35	23.56	0.23
	16QAM			21.67	22.88	0.19
3	QPSK	825.5	847.5	22.19	23.40	0.22
	16QAM			21.47	22.68	0.19
5	QPSK	826.5	846.5	22.39	23.60	0.23
	16QAM			22.05	23.26	0.21
10	QPSK	829	844	22.23	23.44	0.22
	16QAM			21.76	22.97	0.20

LTE Band 7

Part 27						
EIRP Limit(W)		2.00				
Antenna Gain (dBi)		2.01				
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)
5	QPSK	2502.5	2567.5	20.69	22.70	0.19
	16QAM			20.05	22.06	0.16
10	QPSK	2505	2565	20.53	22.54	0.18
	16QAM			20.12	22.13	0.16
15	QPSK	2507.5	2562.5	20.98	22.99	0.20
	16QAM			20.27	22.28	0.17
20	QPSK	2510	2560	20.99	23.00	0.20
	16QAM			20.14	22.15	0.16

5.5. WORST-CASE CONFIGURATION AND MODE

During all testing, EUT is in link mode with base station emulator at maximum power level. The worst-case scenario for all measurements is based on the average conducted output power measurement investigation results. Output power measurements were measured on QPSK, 16QAM. All testing was performed using QPSK and 16QAM modulations to represent the worst case.

The radiated spurious emissions measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT was investigated in three orthogonal orientations X,Y and Z. It was determined that Y orientation was the worst-case orientation.

Radiated spurious emissions were investigated below 30 MHz, 30 MHz - 1 GHz and above 1 GHz. There were no emissions found on below 30 MHz. the emissions between 30 MHz – 1 GHz were tested the highest transmitting power channel and the worse configuration.

Test Items	Worst case test configuration			
Description	Modulation	Channel	Bandwidth (MHz)	RB Configuration
Occupied Bandwidth	QPSK, 16QAM	L, M, H	1.4,3,5,10,15,20	Full RB
Band Edge Compliance	QPSK, 16QAM	L, M, H	1.4,3,5,10,15,20	Full RB
Spurious Emission at Antenna Terminal	QPSK, 16QAM	L, M, H	1.4,3,5,10,15,20	Full RB
Radiated Spurious Emissions	QPSK	L, M, H	The Maximum BW	RB size=1, RB Location= Low

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Band	Antenna Type	MAX Antenna Gain (dBi)
1	LTE Band 5	Internal antenna	3.36
1	LTE Band 7	Internal antenna	2.01

Band	Transmit and Receive Mode	Description
LTE Band 5	☒ 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna
LTE Band 7	☒ 1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna

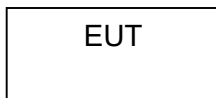
Note: The value of the antenna gain was declared by customer.

5.7. SUPPORT UNITS FOR SYSTEM TEST

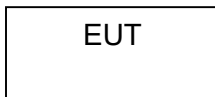
The EUT has been tested as an independent unit

5.8. SETUP DIAGRAM

Radiated Emission:



RF conducted:



6. MEASURING INSTRUMENT AND SOFTWARE USED

Test Equipment of Conducted RF					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40	102257	2025/08/25	2026/08/24
Spectrum Analyzer	KEYSIGHT	N9020A	MY51285127	2025/08/25	2026/08/24
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY61253075	2025/08/25	2026/08/24
Vector Signal Generator	Rohde & Schwarz	SMM100A	101899	2025/08/25	2026/08/24
RF Control box	MWRF-test	MW100-RFCB	MW220926GTG	2025/08/25	2026/08/24
Wideband Radio Communication Tester	Rohde & Schwarz	CMW270	102792	2025/08/25	2026/08/24
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	103235	2025/08/25	2026/08/24
temperature humidity chamber	Espec	SH-241	SH-241-2014	2025/08/25	2026/08/24
RF Test Software	MWRF-test	MTS8310E (Ver. V2/0)	N/A	N/A	N/A

Test Equipment of Radiated emissions below 1GHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
3m Semi-anechoic Chamber	ETS	9m*6m*6m	Q2146	2025/08/23	2026/08/22
EMI Test Receiver	Rohde & Schwarz	ESCI3	101144	2025/08/23	2026/08/22
Pre-Amplifier	HzEMC	HPA-9K0130	HYP A21001	2025/08/23	2026/08/22
Biconilog Antenna	Schwarzbeck	VULB 9168	01315	2022/10/10	2025/10/09
Biconilog Antenna	ETS	3142E	00243651	2025/02/22	2028/02/21
Loop Antenna	ETS	6502	00243668	2025/02/22	2028/02/21
Test Software	Farad	EZ-EMC (Ver.FA-03A2 RE)	N/A	N/A	N/A

Test Equipment of Radiated emissions above 1GHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
3m Semi-anechoic Chamber	ETS	9m*6m*6m	Q2149	2025/08/23	2026/08/22
Spectrum Analyzer	Rohde & Schwarz	FSV40	101413	2025/08/23	2026/08/22
Pre-Amplifier	HzEMC	HPA-1G1850	HYP A21003	2025/08/23	2026/08/22
Horn antenna	ETS	3117	00246069	2025/02/22	2028/02/21
Pre-Amplifier	HzEMC	HPA-184057	HYP A21004	2025/08/23	2026/08/22
Horn antenna	ETS	3116C	00246265	2025/02/22	2028/02/21

RF Filter Bank	HzEMC	HSW-F18	HSWF2218E01	2025/08/23	2026/08/22
RF Filter Bank	HzEMC	HPF18	HPF2218E02	2025/08/23	2026/08/22
Test Software	Farad	EZ-EMC (Ver.FA-03A2 RE+)	N/A	N/A	N/A

7. ANTENNA TERMINAL TEST RESULTS

7.1. EFFECTIVE (ISOTROPIC) RADIATED POWER OF TRANSMITTER

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50

LIMITS

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

24.232(c) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

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

27.50(d) 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 watts EIRP.

27.50(h) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

TEST PROCEDURE

Refer to ANSI C63.26:2015 and KDB 971168 D01 Section 5.6

$ERP/ EIRP = P_{Meas} + GT - LC$

where:

ERP or EIRP = effective or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);

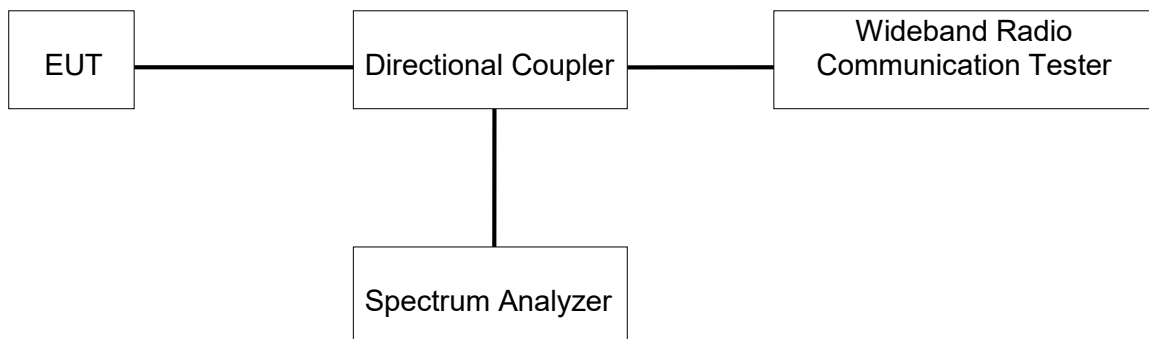
P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB

The transmitter has a maximum radiated ERP / EIRP output powers as follows:

TEST SETUP



TEST ENVIRONMENT

Temperature	21.3°C	Relative Humidity	52%
Atmosphere Pressure	101kPa		

RESULTS

Please refer to Appendix A

7.2. PEAK TO AVERAGE RADIO

LIMITS

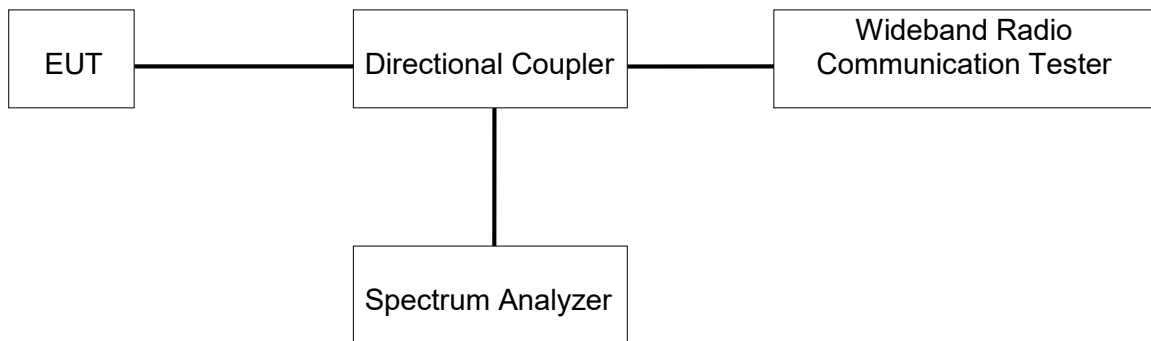
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01;

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The PAR was measured on the Spectrum Analyzer.

TEST SETUP



TEST ENVIRONMENT

Temperature	21.3°C	Relative Humidity	52%
Atmosphere Pressure	101kPa		

RESULTS

Please refer to Appendix A

7.3. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

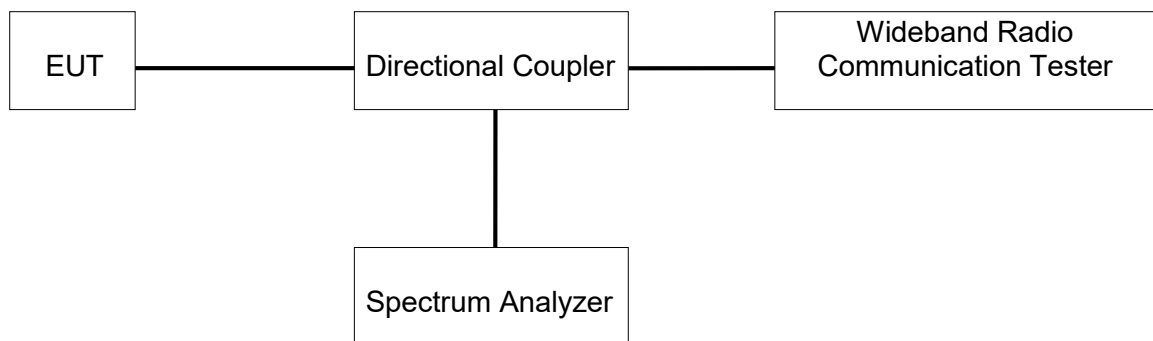
For reporting purposes only.

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

(Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01)

TEST SETUP



TEST ENVIRONMENT

Temperature	21.3°C	Relative Humidity	52%
Atmosphere Pressure	101kPa		

RESULTS

Please refer to Appendix A

7.4. BAND EDGE EMISSIONS

RULE PART(S)

FCC §2.1051, §22.917, §24.238, §27.53

LIMITS

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.

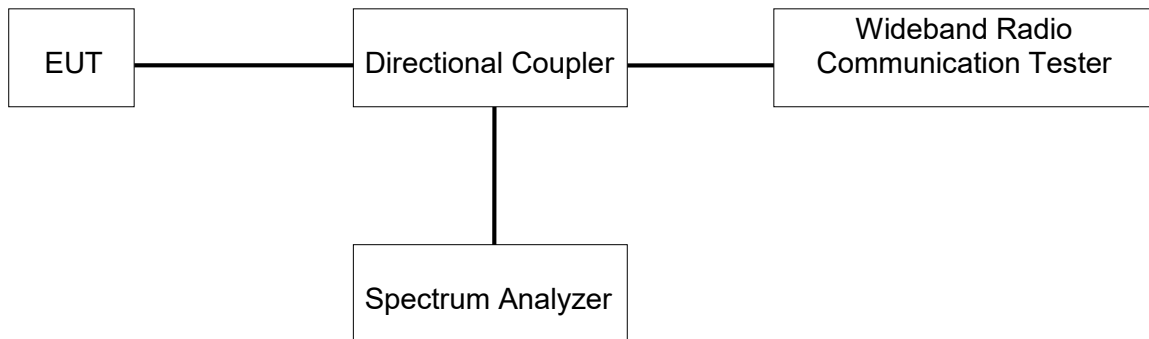
TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

- a) Set the RBW = $1 \sim 1.5$ % of OBW (Typically limited to a minimum RBW of 1% of the OBW)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = Auto;
- e) Detector = RMS;
- f) Ensure that the number of measurement points $\geq 2 \times \text{Span} / \text{RBW}$;
- g) Trace mode = Average (100);

TEST SETUP



TEST ENVIRONMENT

Temperature	21.3°C	Relative Humidity	52%
Atmosphere Pressure	101kPa		

RESULTS

Please refer to Appendix A

7.5. SPURIOUS EMISSION AT ANTENNA TERMINAL

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53

LIMITS

FCC: §22.901, §22.917, §24.238

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.

TEST PROCEDURE

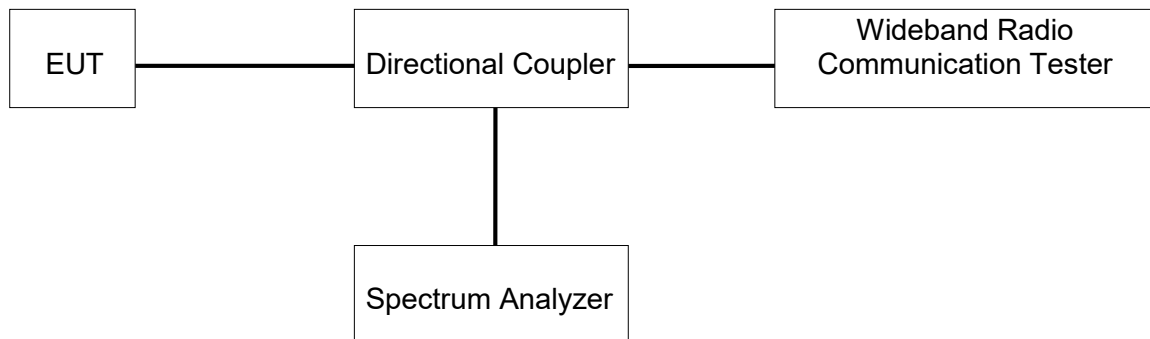
Per KDB 971168 D01 Power Meas License Digital Systems v03r01

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

- a) Set the RBW = 100 kHz for emission below 1GHz and 1MHz for emissions above 1GHz (Tests were performed 1 MHz [Worst case], to sweep 1 time for all frequency range)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points = Max (40001);
- g) Trace mode = average (LTE Band 5), Maxhold (LTE Band 7);

Note: Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

TEST SETUP



TEST ENVIRONMENT

Temperature	21.3°C	Relative Humidity	52%
Atmosphere Pressure	101kPa		

RESULTS

Please refer to Appendix A

7.6. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54

LIMITS

§24.235 The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

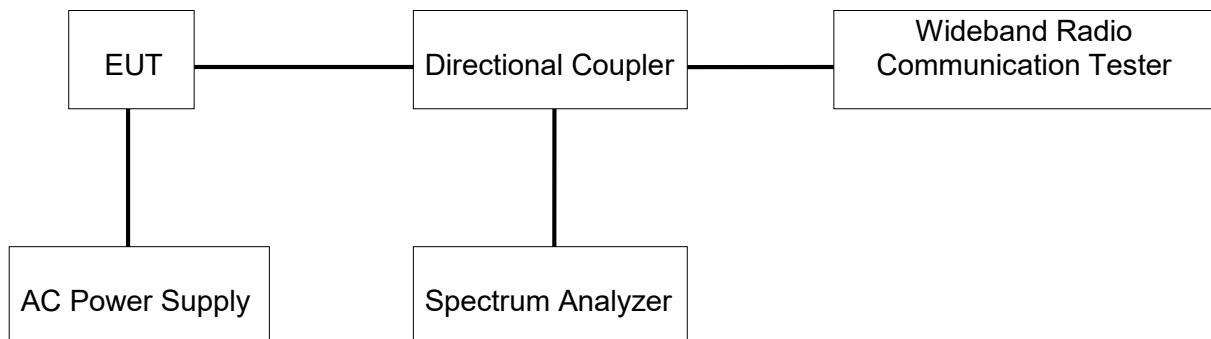
§24.235 and §27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

	Normal Test Conditions	Extreme Test Conditions
Relative Humidity	45 % - 75 %	/
Atmospheric Pressure	100 kPa ~102 kPa	/
Temperature	T_N (Normal Temperature): 24.5 °C	T_L (Low Temperature): -30 °C
		T_H (High Temperature): 70 °C
Supply Voltage	V_N (Normal Voltage): DC 12 V	V_L (Low Voltage): DC 5V
		V_H (High Voltage): DC 16V

TEST SETUP



RESULTS

Please refer to Appendix A

7.7. RADIATED SPURIOUS EMISSIONS

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53

LIMIT

§24.238

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.

§27.53(h)

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.

§22.917(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.

§27.53 (m)

At least $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

TEST PROCEDURE

KDB 971168 D01 Section 7

Below 1GHz test procedure as below:

1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. Calculate power in dBm by the following formula:

$$ERP(dBm) = Pg(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

Where:

P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_g [dBm] - \text{cable loss [dB]}$. The calculated P_d levels are then compared to the absolute spurious emission limit of -13 dBm which is equivalent to the required minimum attenuation of $43 + 10 \log_{10}(\text{Power [Watts]})$.

Above 1GHz test procedure as below:

1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. Calculate power in dBm by the following formula:

$$\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

$$\text{EIRP} = \text{ERP} + 2.15\text{dB}$$

Where: Pg is the generator output power into the substitution antenna.

11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)\text{dB}$ below the transmitter power P(Watts)

$$= P(W) - [43 + 10\log(P)] (\text{dB})$$

$$= [30 + 10\log(P)] (\text{dBm}) - [43 + 10\log(P)] (\text{dB})$$

$$= -13\text{dBm}.$$

NOTE 1: Radiated spurious emissions were investigated below 30 MHz, 30 MHz – 1 GHz and above 1 GHz. There were no emissions found on below 30 MHz and 30 MHz – 1 GHz.

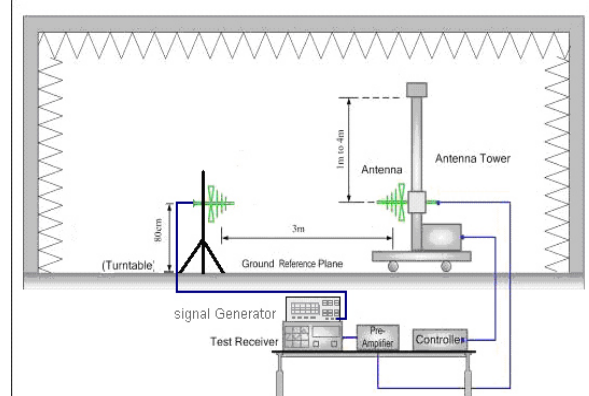
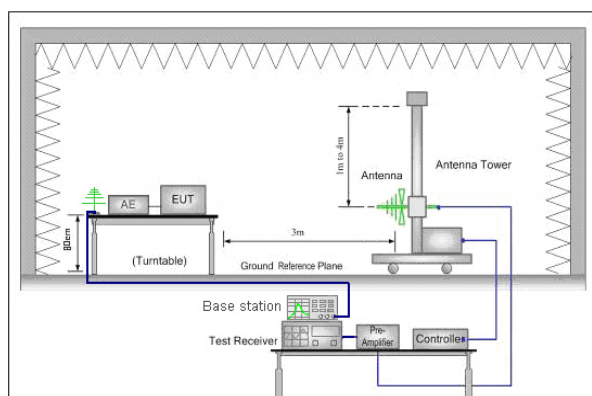
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site.

Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

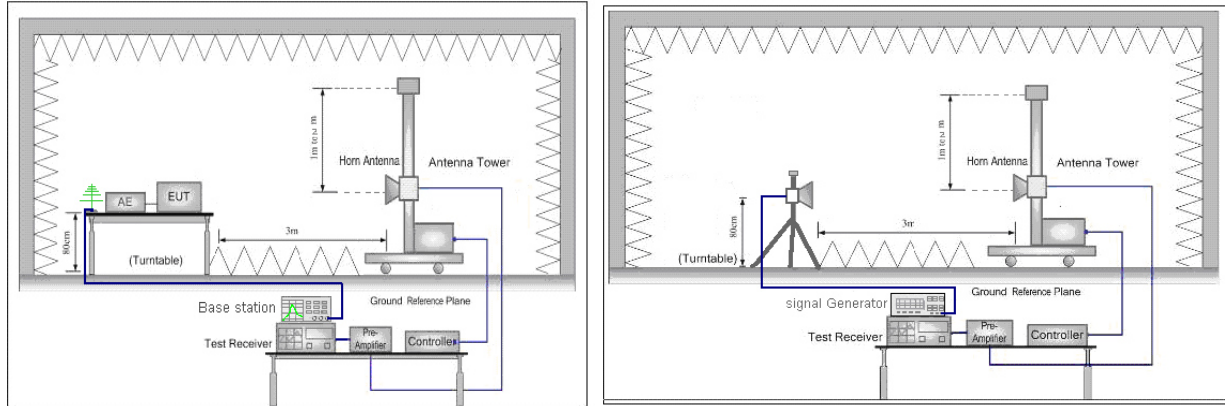
NOTE 2: Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

TEST SETUP

Test Setup for Below 1 GHz



Test Setup for Above 1 GHz



TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	51%
Atmosphere Pressure	101kPa		

RESULTS

Please refer to Appendix B

END OF REPORT