Partial FCC Test Report

(PART 90S)

Report No.:	RFBEDW-WTW-P21031095-5
FCC ID:	GKR-LN300EG3L
Test Model:	Lenovo 300e Chromebook Gen 3**********(*=0~9, A~Z, a~z, "-" or blank, for marketing use only, with no impact on RF compliance of the product)
Received Date:	Mar. 31, 2021
Test Date:	Apr. 29 ~ May 04, 2021
Issued Date:	Jul. 09, 2021
Applicant:	Compal Electronics Inc
Address:	No. 581 & 581-1, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan, R.O.C
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RFBEDW-WTW-P21031095-5	Original Release	Jul. 09, 2021

1 Certificate of Conformity

Product:	Notebook Computer
Brand:	Lenovo
Test Model:	Lenovo 300e Chromebook Gen 3**********(*=0~9, A~Z, a~z, "-" or blank, for marketing use only, with no impact on RF compliance of the product)
Sample Status:	Engineering Sample
Applicant:	Compal Electronics Inc
Test Date:	Apr. 29 ~ May 04, 2021
Standards:	FCC Part 90, Subpart S FCC Part 2

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Gina Liu , **Date:** Jul. 09, 2021

Gina Liu / Specialist

Approved by : , **Date:** Jul. 09, 2021

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 90 & Part 2 (LTE 26)			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 90.635 (b)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note 1
2.1055 90.213	Frequency Stability	N/A	Refer to Note 1
2.1049 90.209	Occupied Bandwidth	N/A	Refer to Note 1
2.1051 90.691	Emission Masks	N/A	Refer to Note 1
2.1051 90.691	Conducted Spurious Emissions	N/A	Refer to Note 1
2.1053 90.691	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -31.92 dB at 1638.00 MHz.

Note:

1. This report is a partial report. Therefore, only test item of Effective Radiated Power and Radiated Spurious Emissions tests were performed for this report. Other testing data please refer to BV CPS report no.: RF180704C01-5 for module (Brand: Fibocom, Model: L850-GL)
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Loop Antenna EMCI	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 08, 2020	Jun. 07, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 17, 2021	Feb. 16, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 08, 2020	Jun. 07, 2021
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 01, 2020	May 31, 2021
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun. 06, 2020	Jun. 05, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 9.

3 General Information

3.1 General Description of EUT

Product	Notebook Computer	
Brand	Lenovo	
Test Model	Lenovo 300e Chromebook Gen 3**********(*=0~9, A~Z, a~z, "-" or blank, for marketing use only, with no impact on RF compliance of the product)	
Status of EUT	Engineering Sample	
Power Supply Rating	20.0 Vdc from adapter 11.52 Vdc from battery	
Modulation Type	LTE	QPSK, 16QAM
Frequency Range	LTE Band 26 (Channel Bandwidth: 1.4 MHz)	814.7 ~ 823.3 MHz
	LTE Band 26 (Channel Bandwidth: 3 MHz)	815.5 ~ 822.5 MHz
	LTE Band 26 (Channel Bandwidth: 5 MHz)	816.5 ~ 821.5 MHz
	LTE Band 26 (Channel Bandwidth: 10 MHz)	819 MHz
Max. ERP Power	LTE Band 26 (Channel Bandwidth: 1.4 MHz)	111.429 mW (20.47dBm)
	LTE Band 26 (Channel Bandwidth: 3 MHz)	111.944 mW (20.49dBm)
	LTE Band 26 (Channel Bandwidth: 5 MHz)	110.154 mW (20.42dBm)
	LTE Band 26 (Channel Bandwidth: 10 MHz)	104.713 mW (20.20dBm)
Antenna Type	Refer to Note as below	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

1. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	Lenovo	ADLX45YLC2D	I/P: 100-240Vac, 50-60Hz, 1.8A O/P: 20.0V===2.25A, 45.0W 1.75M / 0core
Adapter 2	Lenovo	ADLX65YCC3D	I/P: 100-240Vac, 50-60Hz, 1.8A O/P: 20.0V===3.25A, 65.0W 1.77M / 0core
Adapter 3	Lenovo	ADLX65NLC3A	I/P: 100-240Vac, 50-60Hz, 1.8A O/P: 20.0V ===3.25A 1.55M / 0core
Battery	Lenovo	L20M3PG0	11.52 Vdc, 3994 mAh, 46Wh
LTE module	Fibocom	L850-GL	-

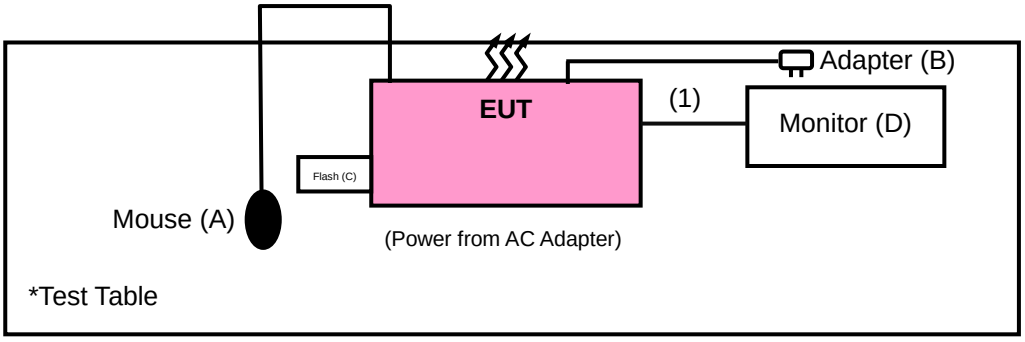
2. The antenna information is listed as below.

Ant. Type	Brand	Ant.	Model	Antenna Peak Gain (dBi)	Connector
				LTE 26	
PIFA	Pulse	Main	SZ18665 (DC33002JN20)	-0.27	IPEX 20565 or compatible.
		Aux.	SZ1868E (DC33002JN30)		
	South Star	Main	N19-0814-R0A (DC33002J020)	-4.10	Kangshuo MHF-B13-N-01
		Aux.	N19-0815-R0A (DC33002J030)		

* The Max antenna gain was chosen for final test.

3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Mouse	Microsoft	1113	9170515897028	FCC DOC Approved	-
B	Adapter	Lenovo	ADLX45YLC2D	NA	NA	Provided by client
C	Flash	HP	v250W	09	NA	-
D	Monitor	DELL	U2410	CN-0J257M-72872-0A6-02YL	Doc	-

No.	Signal Cable Description Of The Above Support Units
1.	HDMI Cable: 1m

Note:
1. All power cords of the above support units are non-shielded (1.8m).
2. Item C acted as communication partners to transfer data.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis & NB Mode, and antenna ports.
The worst case was found when positioned on NB mode for radiated emission.

LTE Band 26

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		26740	26740	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
-	Radiated Emission	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK	1 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK	1 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK	1 RB / 0 RB Offset
		26740	26740	10 MHz	QPSK	1 RB / 0 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.
3. For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jones Chang
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Rex Wang

3.4 General Description of Applied Standards and references

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

Test Standard:
FCC 47 CFR Part 2
FCC 47 CFR Part 90
ANSI 63.26-2015

Note: All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 971168 D01 Power Meas License Digital Systems v03r01
KDB 971168 D02 Misc Rev Approv License Devices v02r01
ANSI/TIA/EIA-603-E 2016

Note: All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw) ERP.

4.1.2 Test Procedures

Maximum EIRP / ERP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$EIRP = P_{Meas} + G_T$

$ERP = P_{Meas} + G_T - 2.15$

where

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

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

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

Conducted Power Measurement:

The EUT was set up for the maximum power with WCDMA and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 Test Setup

Conducted Power Measurement:

4.1.4 Test Results

Conducted Output Power (dBm)

LTE Band 26																	
BW	MCS Index	RB Size	RB Offset		Mid		3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel			26740					Channel		26715	26740	26765	
		Frequency (MHz)			819.0					Frequency (MHz)		816.5	819.0	821.5	
10M	QPSK	1	0		22.54		0	5M	QPSK	1	0	22.82	22.47	22.62	0
		1	24		22.62		0			1	12	22.70	22.53	22.57	0
		1	49		22.49		0			1	24	22.84	22.54	22.40	0
		25	0		21.58		1			12	0	21.82	21.65	21.47	1
		25	12		21.48		1			12	6	21.89	21.51	21.64	1
		25	25		21.59		1			12	13	21.92	21.45	21.63	1
		50	0		21.59		1			25	0	21.96	21.58	21.61	1
	16QAM	1	0		21.96		1		16QAM	1	0	22.18	22.02	21.91	1
		1	24		21.83		1			1	12	22.38	21.79	22.03	1
		1	49		21.47		1			1	24	22.32	21.47	22.09	1
		25	0		20.85		2			12	0	21.00	20.74	20.67	2
		25	12		20.55		2			12	6	20.94	20.68	20.56	2
		25	25		20.88		2			12	13	20.93	20.77	20.73	2
		50	0		20.88		2			25	0	21.09	20.86	20.56	2
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26705	26740	26775				Channel		26697	26740	26783	
		Frequency (MHz)		815.5	819.0	822.5				Frequency (MHz)		814.7	819.0	823.3	
3M	QPSK	1	0	22.91	22.49	22.66	0	1.4M	QPSK	1	0	22.83	22.42	22.63	0
		1	7	22.65	22.48	22.46	0			1	2	22.62	22.57	22.48	0
		1	14	22.89	22.41	22.49	0			1	5	22.89	22.33	22.57	0
		8	0	21.76	21.52	21.58	1			3	0	22.88	22.44	22.56	0
		8	3	22.01	21.61	21.69	1			3	1	22.68	22.38	22.53	0
		8	7	22.01	21.47	21.67	1			3	3	22.85	22.41	22.49	0
		15	0	21.91	21.52	21.69	1			6	0	21.90	21.69	21.69	1
	16QAM	1	0	22.02	21.87	21.86	1		16QAM	1	0	22.19	21.89	21.80	1
		1	7	22.44	21.89	21.98	1			1	2	22.35	21.81	21.96	1
		1	14	22.45	21.55	22.17	1			1	5	22.40	21.57	22.18	1
		8	0	20.91	20.71	20.63	2			3	0	22.18	22.10	21.86	1
		8	3	20.88	20.62	20.63	2			3	1	22.50	21.84	22.04	1
		8	7	20.93	20.79	20.81	2			3	3	22.51	21.64	22.11	1
		15	0	20.99	20.78	20.62	2			6	0	21.08	20.71	20.60	2

ERP Power (dBm)

LTE Band 26																	
BW	MCS Index	RB Size	RB Offset		Mid		3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel			26740					Channel		26715	26740	26765	
		Frequency (MHz)			819.0					Frequency (MHz)		816.5	819.0	821.5	
10M	QPSK	1	0		20.12		0	5M	QPSK	1	0	20.40	20.05	20.20	0
		1	24		20.20		0			1	12	20.28	20.11	20.15	0
		1	49		20.07		0			1	24	20.42	20.12	19.98	0
		25	0		19.16		1			12	0	19.40	19.23	19.05	1
		25	12		19.06		1			12	6	19.47	19.09	19.22	1
		25	25		19.17		1			12	13	19.50	19.03	19.21	1
		50	0		19.17		1			25	0	19.54	19.16	19.19	1
	16QAM	1	0		19.54		1		16QAM	1	0	19.76	19.60	19.49	1
		1	24		19.41		1			1	12	19.96	19.37	19.61	1
		1	49		19.05		1			1	24	19.90	19.05	19.67	1
		25	0		18.43		2			12	0	18.58	18.32	18.25	2
		25	12		18.13		2			12	6	18.52	18.26	18.14	2
		25	25		18.46		2			12	13	18.51	18.35	18.31	2
		50	0		18.46		2			25	0	18.67	18.44	18.14	2
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26705	26740	26775				Channel		26697	26740	26783	
		Frequency (MHz)		815.5	819.0	822.5				Frequency (MHz)		814.7	819.0	823.3	
3M	QPSK	1	0	20.49	20.07	20.24	0	1.4M	QPSK	1	0	20.41	20.00	20.21	0
		1	7	20.23	20.06	20.04	0			1	2	20.20	20.15	20.06	0
		1	14	20.47	19.99	20.07	0			1	5	20.47	19.91	20.15	0
		8	0	19.34	19.10	19.16	1			3	0	20.46	20.02	20.14	0
		8	3	19.59	19.19	19.27	1			3	1	20.26	19.96	20.11	0
		8	7	19.59	19.05	19.25	1			3	3	20.43	19.99	20.07	0
		15	0	19.49	19.10	19.27	1			6	0	19.48	19.27	19.27	1
	16QAM	1	0	19.60	19.45	19.44	1		16QAM	1	0	19.77	19.47	19.38	1
		1	7	20.02	19.47	19.56	1			1	2	19.93	19.39	19.54	1
		1	14	20.03	19.13	19.75	1			1	5	19.98	19.15	19.76	1
		8	0	18.49	18.29	18.21	2			3	0	19.76	19.68	19.44	1
		8	3	18.46	18.20	18.21	2			3	1	20.08	19.42	19.62	1
		8	7	18.51	18.37	18.39	2			3	3	20.09	19.22	19.69	1
		15	0	18.57	18.36	18.20	2			6	0	18.66	18.29	18.18	2

4.2 Radiated Emission Measurement

4.2.1 Limits of Radiated Emission Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB. The limit of emission is equal to -13 dBm.

4.2.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
c. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15 dB.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:

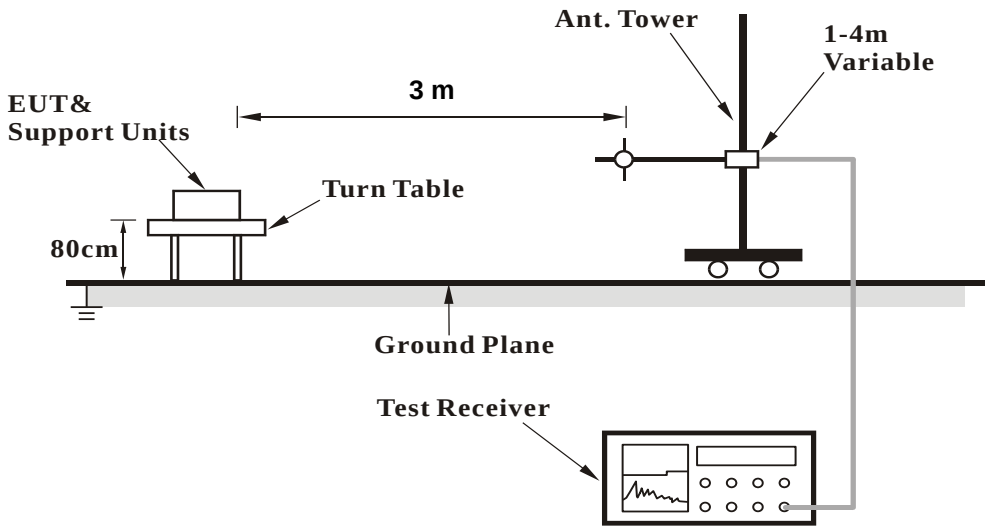
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.2.3 Deviation from Test Standard

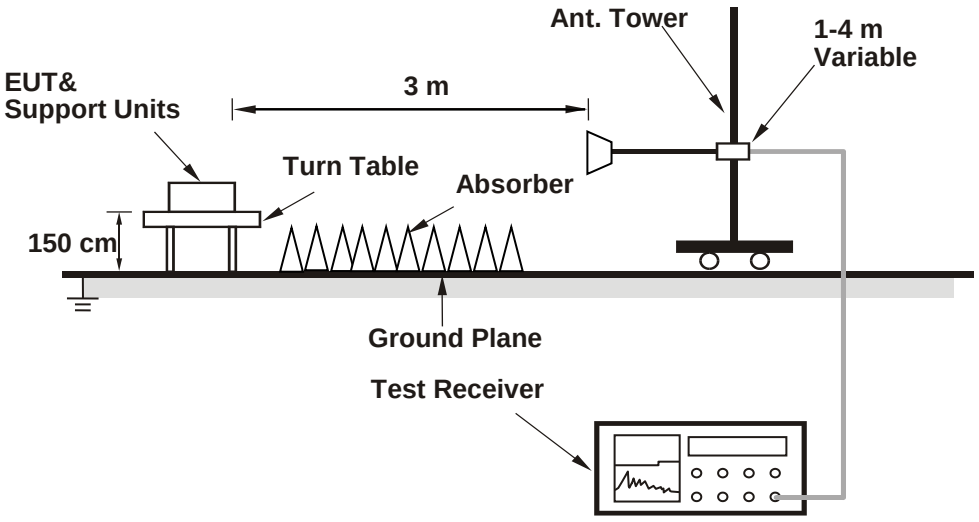
No deviation.

4.2.4 Test Setup

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.5 Test Results

BELOW 1GHz

RF Mode	TX LTE Band XXVI-5MHz	Channel	CH 26740：819 MHz
Frequency Range	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	-50.76	-13.00	-37.76	2.00 H	42	56.97	-107.73
2	87.23	-50.54	-13.00	-37.54	2.00 H	156	61.21	-111.75
3	142.52	-51.33	-13.00	-38.33	1.00 H	40	54.74	-106.07
4	290.93	-56.91	-13.00	-43.91	1.00 H	221	47.50	-104.41
5	448.07	-62.10	-13.00	-49.10	1.50 H	187	38.86	-100.96
6	653.71	-57.97	-13.00	-44.97	1.25 H	359	39.11	-97.08
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	57.16	-51.36	-13.00	-38.36	1.25 V	146	55.38	-106.74
2	129.91	-59.62	-13.00	-46.62	1.00 V	288	47.52	-107.14
3	189.08	-57.31	-13.00	-44.31	1.25 V	80	50.94	-108.25
4	293.84	-56.80	-13.00	-43.80	1.00 V	254	47.55	-104.35
5	492.69	-61.14	-13.00	-48.14	1.50 V	234	39.05	-100.19
6	594.54	-59.20	-13.00	-46.20	1.00 V	188	38.88	-98.08

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

ABOVE 1GHz

RF Mode	TX LTE Band XXVI-1.4MHz	Channel	CH 26697：814.7 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1629.40	-45.20	-13.00	-32.20	2.16 H	299	58.28	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1629.40	-48.89	-13.00	-35.89	3.55 V	194	54.59	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-1.4MHz	Channel	CH 26740：819 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-45.18	-13.00	-32.18	2.18 H	294	58.30	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-48.82	-13.00	-35.82	3.60 V	197	54.66	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-1.4MHz	Channel	CH 26783：823.3 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1646.60	-45.09	-13.00	-32.09	2.15 H	291	58.40	-103.49
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1646.60	-49.05	-13.00	-36.05	3.61 V	194	54.44	-103.49

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-3MHz	Channel	CH 26705：815.5 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1631.00	-45.40	-13.00	-32.40	2.16 H	299	58.08	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1631.00	-49.22	-13.00	-36.22	3.54 V	199	54.26	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-3MHz	Channel	CH 26740：819 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-45.24	-13.00	-32.24	2.12 H	300	58.24	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-49.01	-13.00	-36.01	3.50 V	210	54.47	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-3MHz	Channel	CH 26775：822.5 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1645.00	-45.55	-13.00	-32.55	2.10 H	303	57.93	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1645.00	-49.45	-13.00	-36.45	3.40 V	203	54.03	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-5MHz	Channel	CH 26715：816.5 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1633.00	-45.06	-13.00	-32.06	2.14 H	288	58.42	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1633.00	-48.97	-13.00	-35.97	3.51 V	197	54.51	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-5MHz	Channel	CH 26740：819 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	**1638.00**	**-44.92**	**-13.00**	**-31.92**	**2.16 H**	**292**	**58.56**	**-103.48**
Antenna Polarity & Test Distance : Vertical at 3m								
No	**Frequency (MHz)**	**ERP (dBm)**	**Limit (dBm)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	1638.00	-49.06	-13.00	-36.06	3.58 V	201	54.42	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-5MHz	Channel	CH 26765：821.5 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1643.00	-45.15	-13.00	-32.15	2.15 H	296	58.33	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1643.00	-49.10	-13.00	-36.10	3.61 V	198	54.38	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

RF Mode	TX LTE Band XXVI-10MHz	Channel	CH 26740：819 MHz
Frequency Range	1GMHz ~ 18GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-45.04	-13.00	-32.04	2.15 H	294	58.44	-103.48
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-49.04	-13.00	-36.04	3.55 V	196	54.44	-103.48

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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