FCC Test Report
(Part 90 Subpart S)

Report No.:	RF201007C02-4
FCC ID:	2AA5WKMP7R2BC
Test Model:	PA-MR10LN
Received Date:	Oct. 07, 2020
Test Date:	Oct. 17 ~ Dec. 30, 2020
Issued Date:	Dec. 30, 2020
Applicant:	NEC Platforms, Ltd.
Address:	2-3, tsukasa-machi, kanda, chiyoda-ku, Tokyo 101-8532 Japan
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
RF201007C02-4	Original release	Dec. 30, 2020

1 Certificate of Conformity

Product:	Aterm MR10LN
Brand:	NEC
Test Model:	PA-MR10LN
Sample Status:	Engineering sample
Applicant:	NEC Platforms, Ltd.
Test Date:	Oct. 17 ~ Dec. 30, 2020
Standards:	FCC Part 90, Subpart **I,** S

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 : Celine Chou , **Date:** Dec. 30, 2020

Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** Dec. 30, 2020

Bruce Chen / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 90 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 90.635(b)	Maximum Peak Output Power Limit: max. 100 watts e.r.p peak power	Pass	Meet the requirement of limit.
2.1055 90.213	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 90.209	Occupied Bandwidth	Pass	Meet the requirement of limit.
2.1051 90.691	Emission Masks	Pass	Meet the requirement of limit.
2.1051 90.691	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 90.691	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -36.08dB at 52.49MHz.

Note: 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	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102579	Jul. 07, 2020	Jul. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 09, 2020	Jun. 08, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 11, 2019	Nov. 10, 2020
			Nov. 04, 2020	Nov. 03, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-161	Nov. 08, 2019	Nov. 07, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 16, 2020	Aug. 15, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 23, 2020	Mar. 22, 2021
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM- 8000	Cable-CH3-03 (309224+170907)	Aug. 16, 2020	Aug. 15, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Standard Temperature And Humidity Chamber TERCHY	MHU-225AU	920842	May 27, 2020	May 26, 2021
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun 06, 2020	Jun 05, 2021
DC Power Supply Keysight	U8002A	MY56330015	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Feb. 13, 2020	Feb. 12, 2021
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 25, 2019	Dec. 24, 2020
		6201240431	Dec. 21, 2020	Dec. 20, 2021
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2019	Nov. 24, 2020
			Nov. 25, 2020	Nov. 24, 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 3.

3 General Information

3.1 General Description of EUT

Product	Aterm MR10LN			
Brand	NEC			
Test Model	PA-MR10LN			
Sample Status	Engineering sample			
Power Supply Rating	5Vdc from adapter or host equipment 3.8Vdc from battery			
Modulation Type	QPSK, 16QAM			
Operating Frequency	LTE Band 26	Channel Bandwidth 1.4MHz	814.7~823.3MHz	
		Channel Bandwidth 3MHz	815.5~822.5MHz	
		Channel Bandwidth 5MHz	816.5~821.5MHz	
		Channel Bandwidth 10MHz	819.0MHz	
Max. ERP Power			QPSK	16QAM
	LTE Band 26	Channel Bandwidth 1.4MHz	100.693mW (20.03dBm)	77.625mW (18.90dBm)
		Channel Bandwidth 3MHz	100.231mW (20.01dBm)	76.913mW (18.86dBm)
		Channel Bandwidth 5MHz	100.462mW (20.02dBm)	77.625mW (18.90dBm)
		Channel Bandwidth 10MHz	98.401mW (19.93dBm)	77.625mW (18.90dBm)
Emission Designator			QPSK	16QAM
	LTE Band 26	Channel Bandwidth 1.4MHz	1M09G7D	1M09D7W
		Channel Bandwidth 3MHz	2M70G7D	2M70D7W
		Channel Bandwidth 5MHz	4M49G7D	4M49D7W
		Channel Bandwidth 10MHz	8M96G7D	8M96D7W
Antenna Type	Refer to Note as below			
Antenna Connector	Refer to Note as below			
Accessory Device	Adapter, Battery			
Cable Supplied	1.0m shielded USB cable without core			

Note:

1. The EUT consumes power from the following adapter and battery.

Adapter (for support unit only)	
Brand	Sony
Model	ACC-283N
Input Power	100-240Vac, 0.2A, 50/60Hz
Output Power	5Vdc, 1.5A

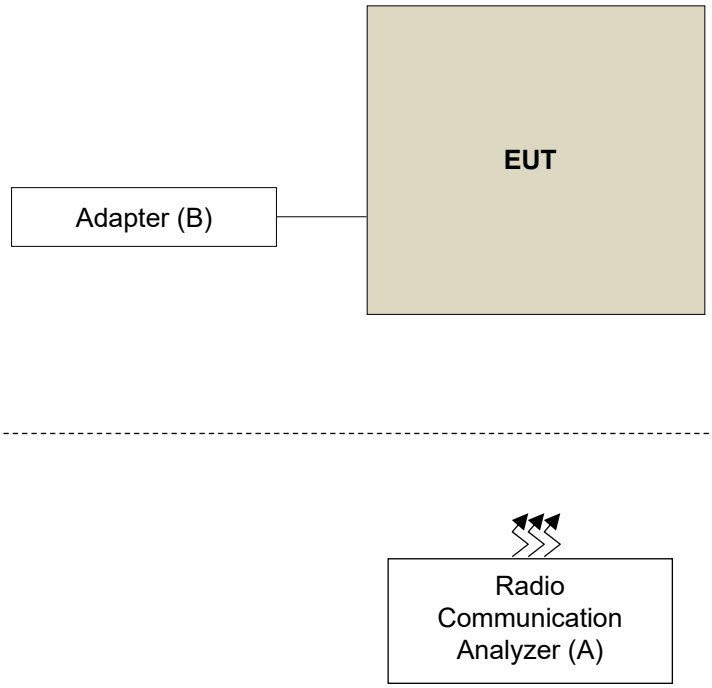
Battery	
Brand	Murata
Model	LIS1717NEPC SY6
Rating	3.8Vdc, 4000mAh

2. The following antennas were provided to the EUT.

Type	Connector	Gain (dBi)						
		WCDMA B2	WCDMA B4	WCDMA B5	LTE B2	LTE B4	LTE B5	LTE B26
Inverted F	NA	0.0	0.0	-1.0	0.0	0.0	-1.0	-1.0

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

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.	Radio Communication Analyzer	Anritsu	MT8821C	6261806803	NA	-
B.	Adapter	Sony	ACC-283N	NA	NA	Provided by manufacturer

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner 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 and antenna ports. The worst case was found when positioned on Z-plane. Following channel(s) was (were) selected for the final test as listed below.

LTE Band 26

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	26697 to 26783	26697 (814.7MHz), 26740 (819.0MHz), 26783 (823.3MHz)	1.4MHz	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 (815.5MHz), 26740 (819.0MHz), 26775 (822.5MHz)	3MHz	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 (816.5MHz), 26740 (819.0MHz), 26765 (821.5MHz)	5MHz	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 (819.0MHz)	10MHz	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
-	Modulation Characteristics	26740	26740 (819.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Frequency Stability	26697 to 26783	26697 (814.7MHz), 26783 (823.3MHz)	1.4MHz	QPSK	6 RB / 0RB Offset
		26705 to 26775	26705 (815.5MHz), 26775 (822.5MHz)	3MHz	QPSK	15 RB / 0RB Offset
		26715 to 26765	26715 (816.5MHz), 26765 (821.5MHz)	5MHz	QPSK	25RB / 0RB Offset
		26740	26740 (819.0MHz)	10MHz	QPSK	50RB / 0RB Offset
-	Occupied Bandwidth	26697 to 26783	26697 (814.7MHz), 26740 (819.0MHz), 26783 (823.3MHz)	1.4MHz	QPSK / 16QAM	6 RB / 0RB Offset
		26705 to 26775	26705 (815.5MHz), 26740 (819.0MHz), 26775 (822.5MHz)	3MHz	QPSK / 16QAM	15 RB / 0RB Offset
		26715 to 26765	26715 (816.5MHz), 26740 (819.0MHz), 26765 (821.5MHz)	5MHz	QPSK / 16QAM	25RB / 0RB Offset
		26740	26740 (819.0MHz)	10MHz	QPSK / 16QAM	50RB / 0RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Emission Masks	26697 to 26783	26697 (814.7MHz), 26783 (823.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
		26705 to 26775	26705 (815.5MHz), 26775 (822.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset
		26715 to 26765	26715 (816.5MHz), 26765 (821.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
		26740	26740 (819.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
-	Conducted Emission	26697 to 26783	26697 (814.7MHz), 26740 (819.0MHz), 26783 (823.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		26705 to 26775	26705 (815.5MHz), 26740 (819.0MHz), 26775 (822.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		26715 to 26765	26715 (816.5MHz), 26740 (819.0MHz), 26765 (821.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		26740	26740 (819.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	26697 to 26783	26697 (814.7MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	26697 to 26783	26697 (814.7MHz), 26740 (819.0MHz), 26783 (823.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		26715 to 26765	26715 (816.5MHz), 26740 (819.0MHz), 26765 (821.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		26740	26740 (819.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, low, mid and high channels were pre-tested in chamber with 1.4MHz mode. Low channel was found to be the worst case and therefore had been chosen for all final tests.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Modulation characteristics	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Frequency Stability	24deg. C, 64%RH	3.80Vdc	Willy Cheng
Occupied Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Emission Mask	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Conducted Emission	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Radiated Emission	26deg. C, 70%RH	120Vac, 60Hz	Willy Cheng

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 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:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 90

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc Rev Approv License Devices v02r01

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

The radiated peak output power shall be according to the specific rule Part 90.635 that “Mobile station are limited to 100 watts e.r.p”.

4.1.2 Test Procedures

The EUT was set up for the maximum power with 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

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

4.1.4 Test Results

Conducted Output Power (dBm)

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Mid		
		Channel		26740		
		Frequency (MHz)		819		
10M	QPSK	1	0	23.08		
		1	24	23.05		
		1	49	23.04		
		25	0	22.12		
		25	12	22.16		
		25	25	21.99		
		50	0	22.13		
10M	16QAM	1	0	21.88		
		1	24	21.99		
		1	49	22.05		
		25	0	21.04		
		25	12	21.04		
		25	25	20.94		
		50	0	20.87		
BW	MCS Index	Channel		26715	26740	26765
		Frequency (MHz)		816.5	819	821.5
5M	QPSK	1	0	23.08	23.08	23.17
		1	12	23.09	23.05	23.09
		1	24	22.97	23.04	23.06
		12	0	22.11	22.12	22.21
		12	6	22.20	22.16	22.20
		12	13	21.98	21.99	22.05
		25	0	22.13	22.13	22.18
5M	16QAM	1	0	21.79	21.88	21.89
		1	12	22.01	21.99	22.01
		1	24	21.96	22.05	22.05
		12	0	20.95	21.04	21.05
		12	6	20.97	21.04	21.04
		12	13	20.86	20.94	20.94
		25	0	20.93	20.87	20.95

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26705	26740	26775
		Frequency (MHz)		815.5	819	822.5
3M	QPSK	1	0	23.07	22.93	23.16
		1	7	23.05	23.01	22.94
		1	14	23.04	22.93	22.96
		8	0	22.11	22.12	22.06
		8	3	22.13	22.03	22.18
		8	7	22.04	21.95	22.04
		15	0	22.11	22.07	22.06
3M	16QAM	1	0	21.86	21.73	21.83
		1	7	21.94	21.96	21.99
		1	14	22.01	22.00	22.00
		8	0	20.97	21.03	21.02
		8	3	21.02	20.96	20.98
		8	7	20.93	20.83	20.79
		15	0	20.86	20.84	20.85
BW	MCS Index	Channel		26697	26740	26783
		Frequency (MHz)		814.7	819	823.3
1.4M	QPSK	1	0	23.03	22.93	23.12
		1	2	22.99	22.90	23.00
		1	5	22.94	23.01	23.05
		3	0	23.10	23.00	23.18
		3	1	23.03	23.02	23.08
		3	3	22.97	22.88	23.04
		6	0	22.05	21.98	22.11
1.4M	16QAM	1	0	21.70	21.87	21.82
		1	2	21.78	21.99	21.98
		1	5	21.87	21.93	21.91
		3	0	21.90	21.93	22.05
		3	1	21.93	22.00	21.94
		3	3	21.83	21.93	21.92
		6	0	20.84	20.80	20.91

ERP Power (dBm)

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Mid		
		Channel		26740		
		Frequency (MHz)		819		
10M	QPSK	1	0	19.93		
		1	24	19.90		
		1	49	19.89		
		25	0	18.97		
		25	12	19.01		
		25	25	18.84		
		50	0	18.98		
10M	16QAM	1	0	18.73		
		1	24	18.84		
		1	49	18.90		
		25	0	17.89		
		25	12	17.89		
		25	25	17.79		
		50	0	17.72		
BW	MCS Index	Channel		26715	26740	26765
		Frequency (MHz)		816.5	819	821.5
5M	QPSK	1	0	19.93	19.93	20.02
		1	12	19.94	19.90	19.94
		1	24	19.82	19.89	19.91
		12	0	18.96	18.97	19.06
		12	6	19.05	19.01	19.05
		12	13	18.83	18.84	18.90
		25	0	18.98	18.98	19.03
5M	16QAM	1	0	18.64	18.73	18.74
		1	12	18.86	18.84	18.86
		1	24	18.81	18.90	18.90
		12	0	17.80	17.89	17.90
		12	6	17.82	17.89	17.89
		12	13	17.71	17.79	17.79
		25	0	17.78	17.72	17.80

*ERP = Conducted + antenna gain - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26705	26740	26775
		Frequency (MHz)		815.5	819	822.5
3M	QPSK	1	0	19.92	19.78	20.01
		1	7	19.90	19.86	19.79
		1	14	19.89	19.78	19.81
		8	0	18.96	18.97	18.91
		8	3	18.98	18.88	19.03
		8	7	18.89	18.80	18.89
		15	0	18.96	18.92	18.91
3M	16QAM	1	0	18.71	18.58	18.68
		1	7	18.79	18.81	18.84
		1	14	18.86	18.85	18.85
		8	0	17.82	17.88	17.87
		8	3	17.87	17.81	17.83
		8	7	17.78	17.68	17.64
		15	0	17.71	17.69	17.70
BW	MCS Index	Channel		26697	26740	26783
		Frequency (MHz)		814.7	819	823.3
1.4M	QPSK	1	0	19.88	19.78	19.97
		1	2	19.84	19.75	19.85
		1	5	19.79	19.86	19.90
		3	0	19.95	19.85	20.03
		3	1	19.88	19.87	19.93
		3	3	19.82	19.73	19.89
		6	0	18.90	18.83	18.96
1.4M	16QAM	1	0	18.55	18.72	18.67
		1	2	18.63	18.84	18.83
		1	5	18.72	18.78	18.76
		3	0	18.75	18.78	18.90
		3	1	18.78	18.85	18.79
		3	3	18.68	18.78	18.77
		6	0	17.69	17.65	17.76

*ERP = Conducted + antenna gain - 2.15

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

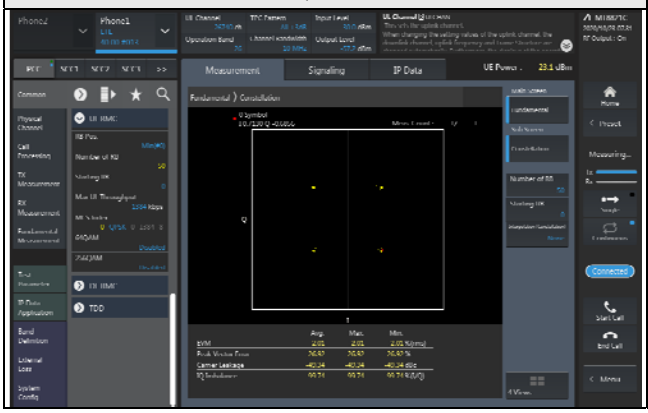
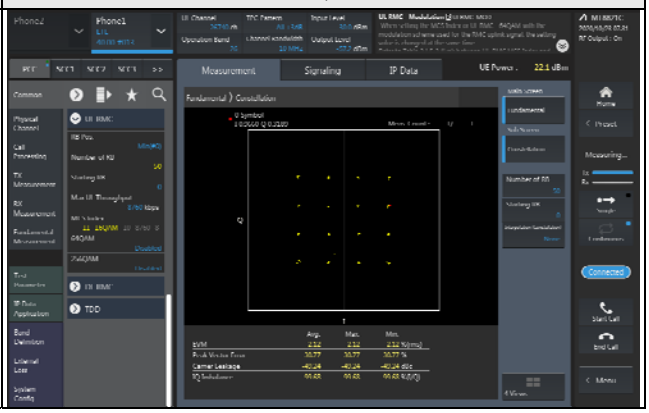
N/A

4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup

4.2.4 Test Results

LTE Band 26	
Spectrum Plot of Measurement Value	
Channel: 26740 / Frequency (MHz): 819.0MHz	
QPSK	16QAM
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

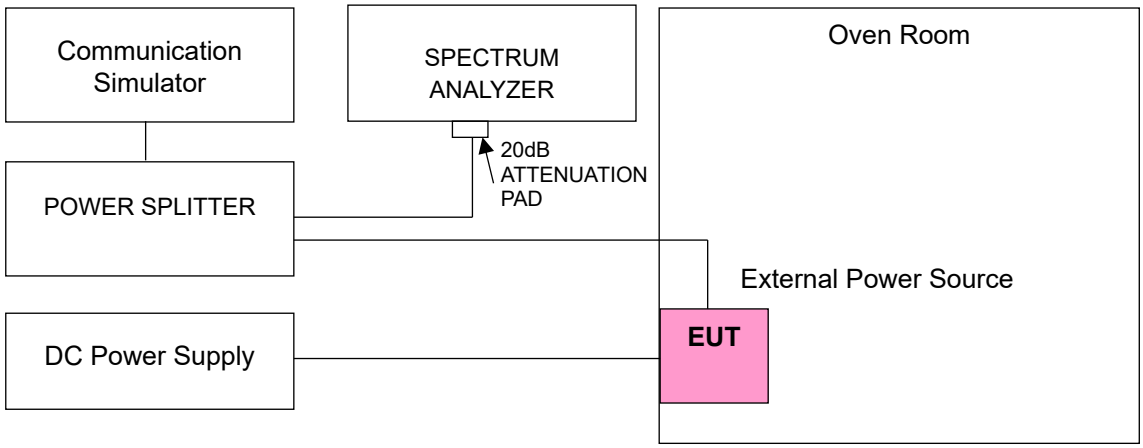
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	814.700001	0.002	823.300004	0.004
3.80	814.700004	0.005	823.300003	0.004
4.37	814.700004	0.005	823.300004	0.005

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	814.700002	0.002	823.300003	0.003
-20	814.700002	0.002	823.300002	0.003
-10	814.700002	0.002	823.300003	0.003
0	814.700003	0.004	823.300004	0.004
10	814.700003	0.004	823.300003	0.003
20	814.699998	-0.002	823.299997	-0.004
30	814.699997	-0.003	823.299998	-0.002
40	814.699998	-0.003	823.299999	-0.001
50	814.699997	-0.004	823.299999	-0.001
55	814.699996	-0.005	823.299998	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	815.500001	0.002	822.500002	0.002
3.80	815.500004	0.005	822.500001	0.001
4.37	815.500002	0.002	822.500002	0.002

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	815.500003	0.004	822.500004	0.004
-20	815.500003	0.004	822.500004	0.004
-10	815.500003	0.004	822.500004	0.004
0	815.500003	0.004	822.500002	0.002
10	815.500001	0.002	822.500004	0.005
20	815.499998	-0.003	822.499998	-0.003
30	815.499996	-0.005	822.499997	-0.004
40	815.499998	-0.003	822.499999	-0.001
50	815.499996	-0.005	822.499998	-0.003
55	815.499996	-0.004	822.499997	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	816.500002	0.002	821.500002	0.003
3.80	816.500003	0.003	821.500004	0.005
4.37	816.500002	0.002	821.500003	0.004

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	816.500002	0.002	821.500003	0.003
-20	816.500002	0.002	821.500003	0.003
-10	816.500002	0.002	821.500003	0.004
0	816.500003	0.004	821.500004	0.004
10	816.500002	0.002	821.500003	0.004
20	816.499997	-0.004	821.499997	-0.004
30	816.499998	-0.002	821.499998	-0.003
40	816.499998	-0.003	821.499998	-0.003
50	816.499997	-0.003	821.499997	-0.003
55	816.499998	-0.002	821.499996	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26	
	Channel Bandwidth: 10 MHz	
	Frequency (MHz)	Frequency Error (ppm)
3.23	819.000002	0.002
3.80	819.000003	0.003
4.37	819.000004	0.005

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26	
	Channel Bandwidth: 10 MHz	
	Frequency (MHz)	Frequency Error (ppm)
-30	819.000002	0.002
-20	819.000002	0.002
-10	819.000002	0.002
0	819.000001	0.002
10	819.000003	0.004
20	818.999998	-0.003
30	818.999999	-0.002
40	818.999997	-0.003
50	818.999999	-0.002
55	818.999997	-0.003

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

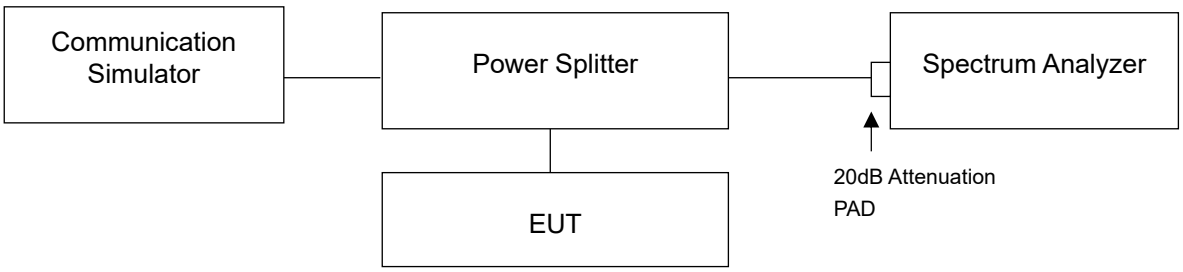
The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.2 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Measurement method, please refer to section 5.4.4 of ANSI C63.26. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

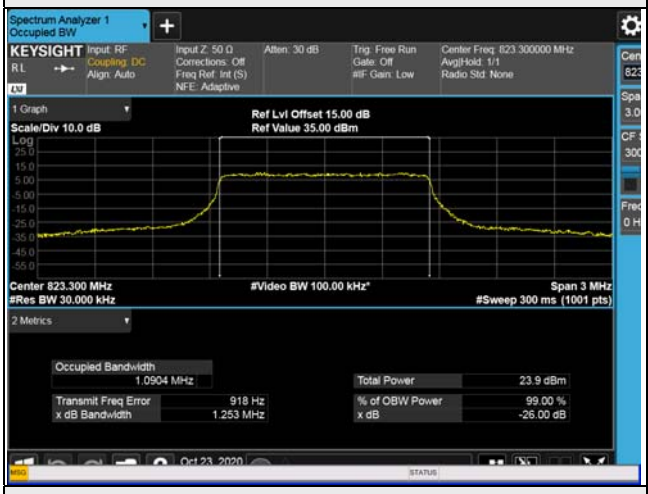
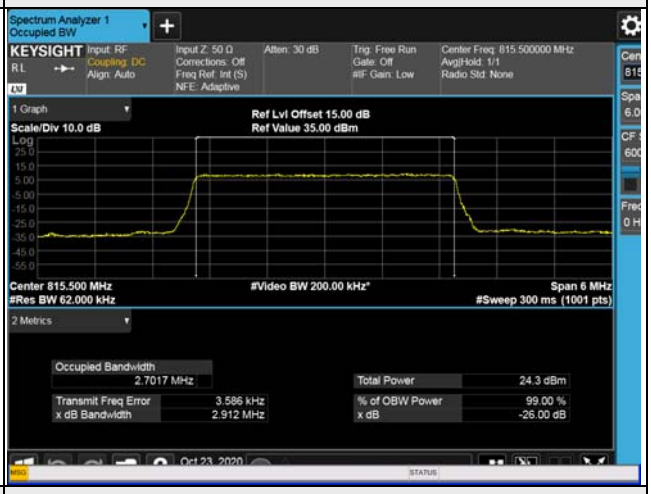
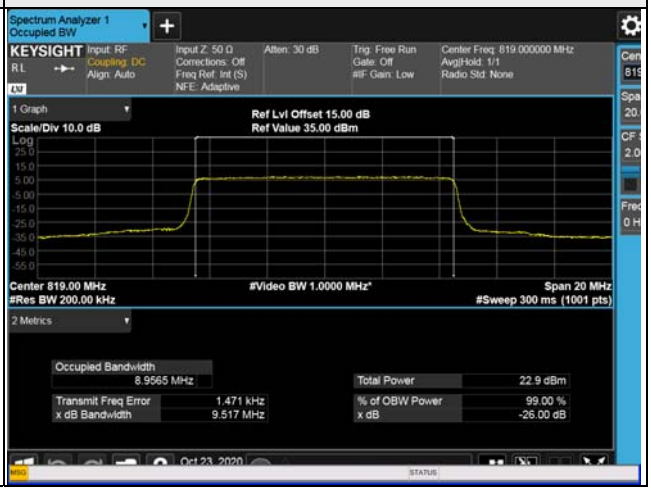
4.4.3 Test Setup



4.4.4 Test Result

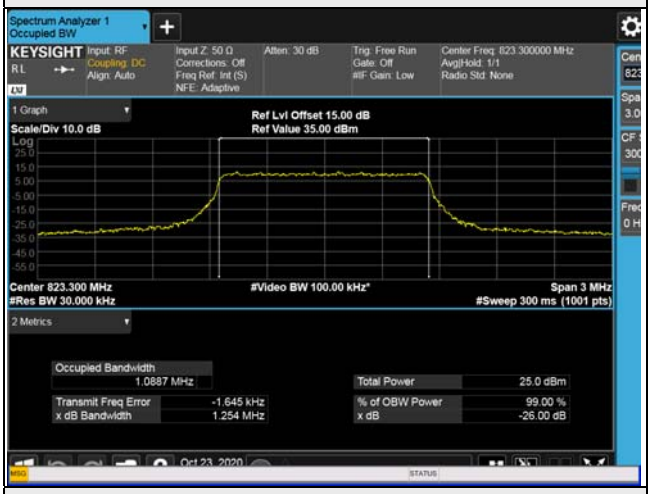
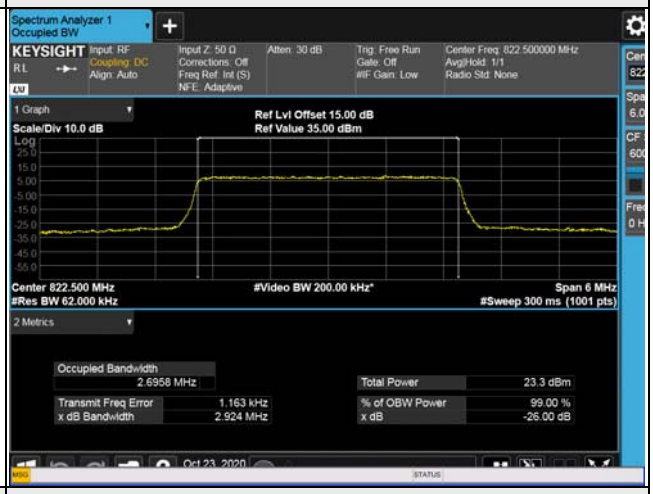
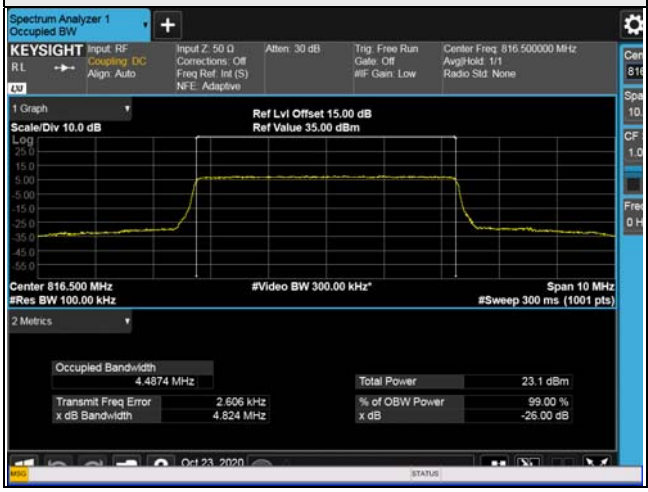
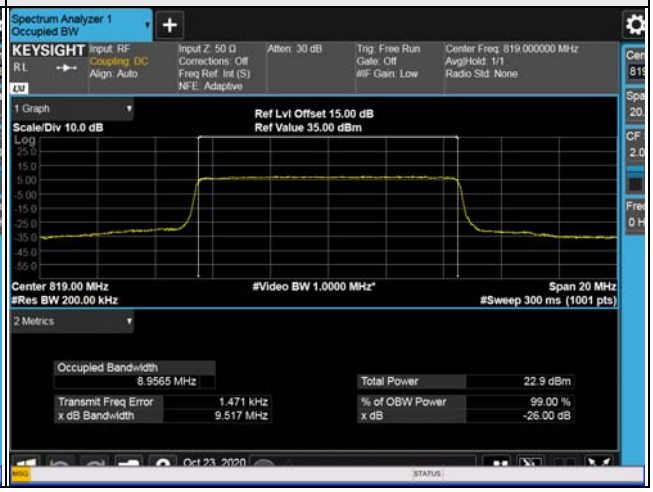
Occupied Bandwidth

LTE Band 26, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26697	814.7	1.09	1.09
26740	819.0	1.09	1.09
26783	823.3	1.09	1.09
LTE Band 26, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26705	815.5	2.70	2.70
26740	819.0	2.70	2.70
26775	822.5	2.70	2.70
LTE Band 26, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26715	816.5	4.49	4.49
26740	819.0	4.49	4.49
26765	821.5	4.49	4.49
LTE Band 26, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26740	819.0	8.96	8.96

Spectrum Plot of Worst Value	
1.4MHz / 16QAM	3MHz / QPSK
	
5MHz / 16QAM	10MHz / 16QAM
	

26dB Bandwidth

LTE Band 26, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26697	814.7	1.25	1.23
26740	819.0	1.25	1.25
26783	823.3	1.25	1.25
LTE Band 26, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26705	815.5	2.91	2.92
26740	819.0	2.92	2.92
26775	822.5	2.90	2.92
LTE Band 26, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26715	816.5	4.81	4.82
26740	819.0	4.82	4.81
26765	821.5	4.80	4.82
LTE Band 26, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26740	819.0	9.49	9.52

Spectrum Plot of Worst Value	
1.4MHz / QPSK	3MHz / 16QAM
	
5MHz / 16QAM	10MHz / 16QAM
	

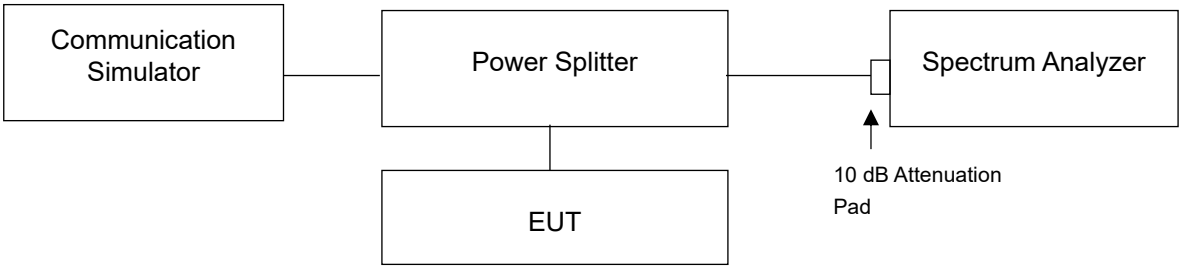
4.5 Emission Mask Measurement

4.5.1 Limits of Emission Mask Measurement

According to FCC part 90.691 shall be tested the emission mask. 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 $Log_{10}(f/6.1)$ decibels or 50 + $10Log_{10}(P)$ 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.
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 + $10Log_{10}(P)$ 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.

Refer KDB 971168 D02 Misc Rev Approv License Devices v02r01
For § 90.691(a), RBW=300 Hz for offset less than 37.5 kHz from channel edge and RBW=100 kHz for offsets greater than 37.5 kHz is allowed.

4.5.2 Test Setup



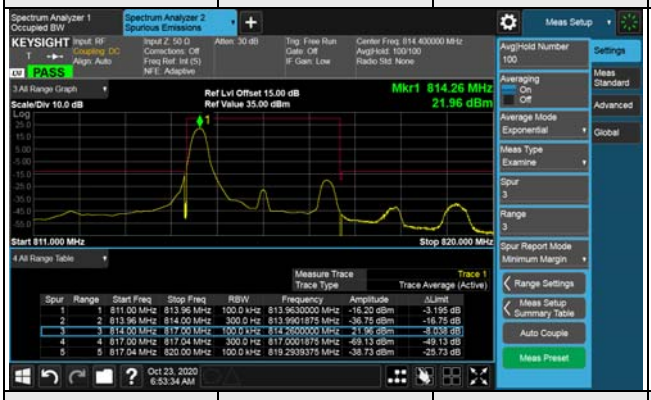
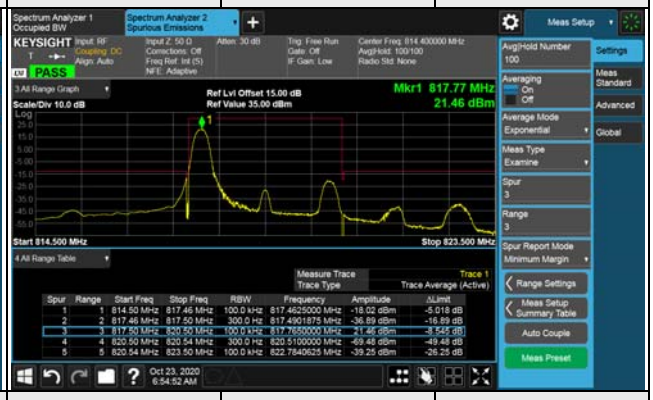
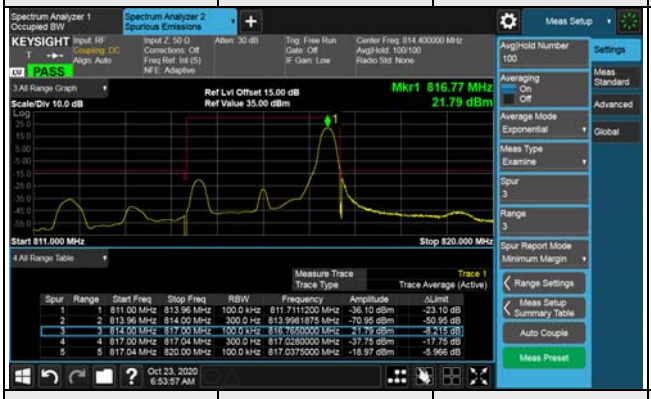
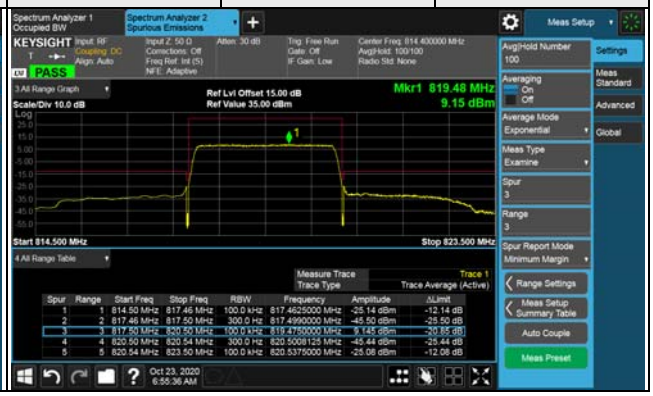
4.5.3 Test Procedures

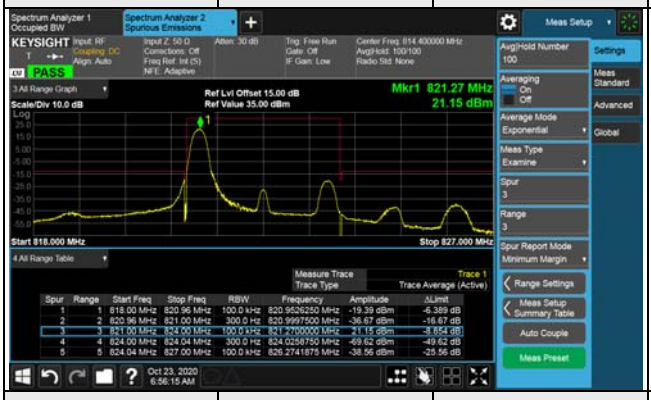
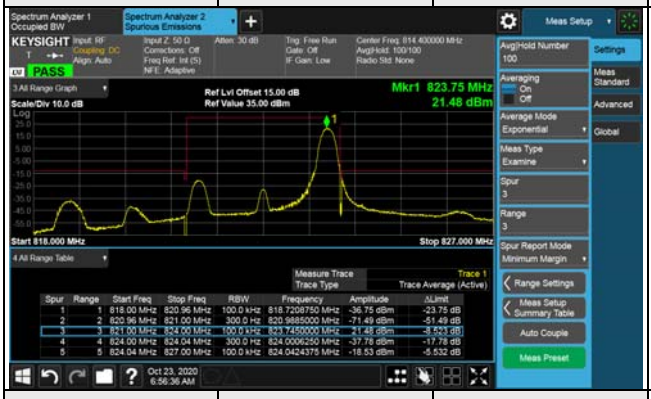
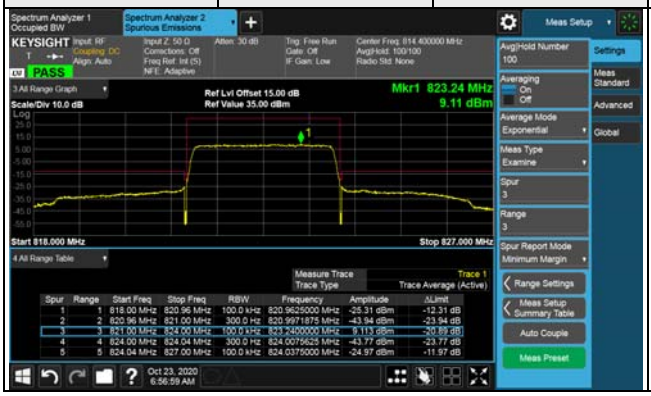
a. The measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Record the test plot.

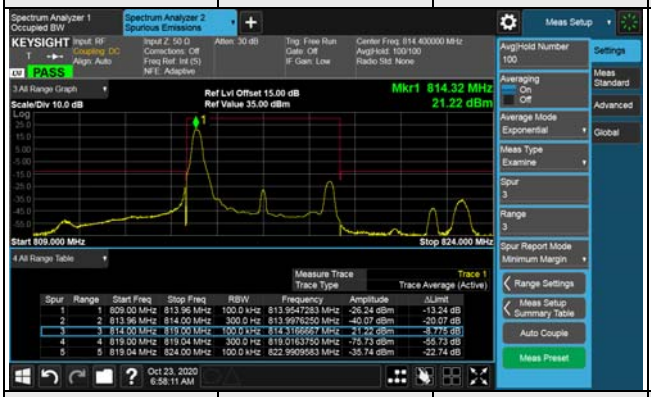
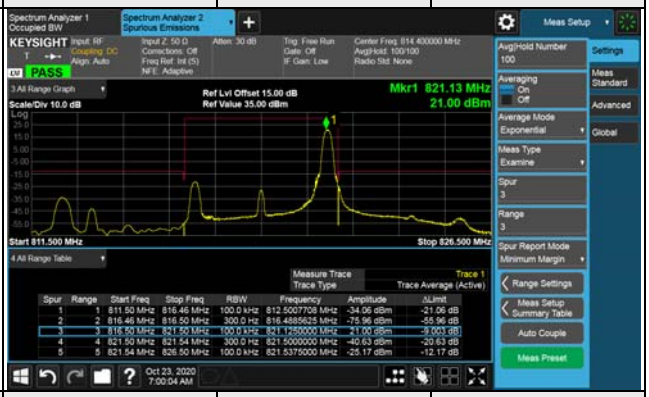
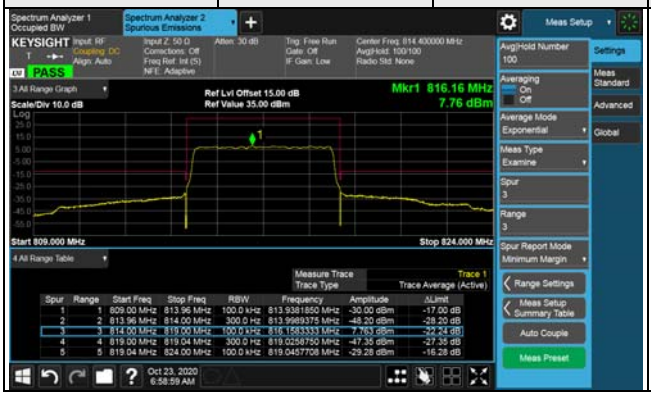
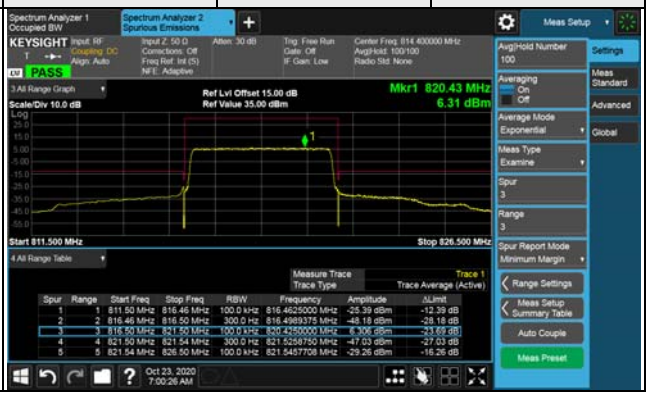
4.5.4 Test Results

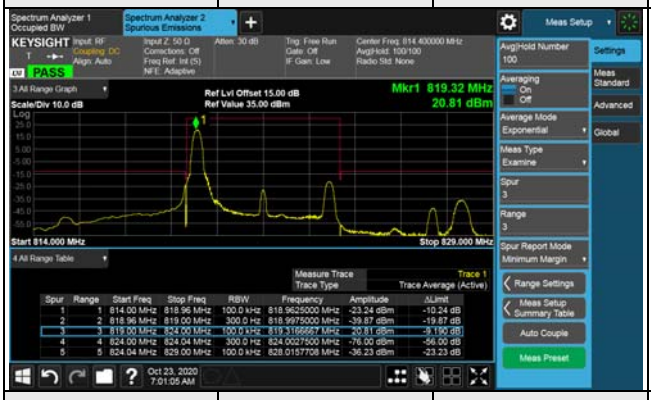
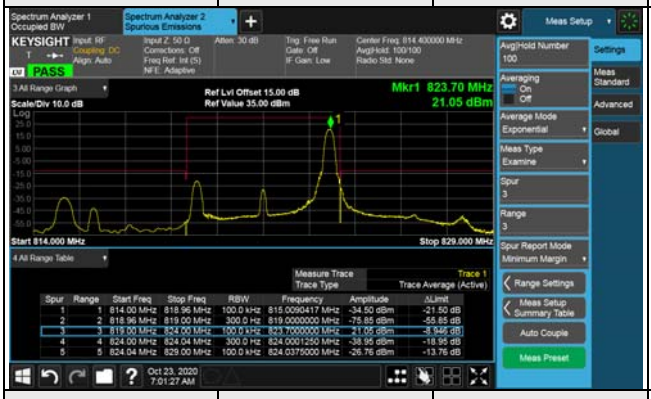
LTE Band 26					
Channel Bandwidth: 1.4 MHz / QPSK					
Channel	26697	1 RB 0	Channel	26740	1 RB 0
					
Channel	26697	1 RB 5	Channel	26740	1 RB 5
					
Channel	26697	Full RB	Channel	26740	Full RB
					

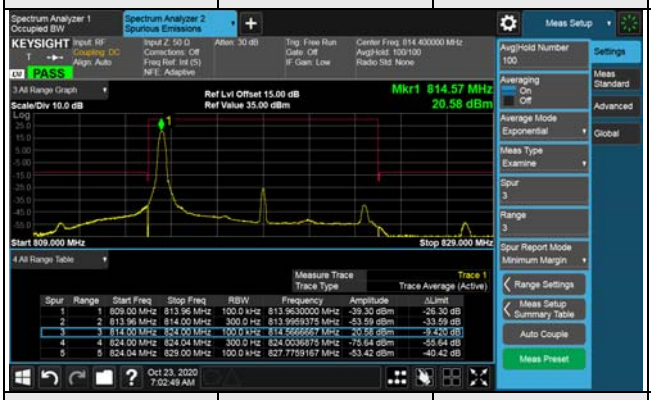
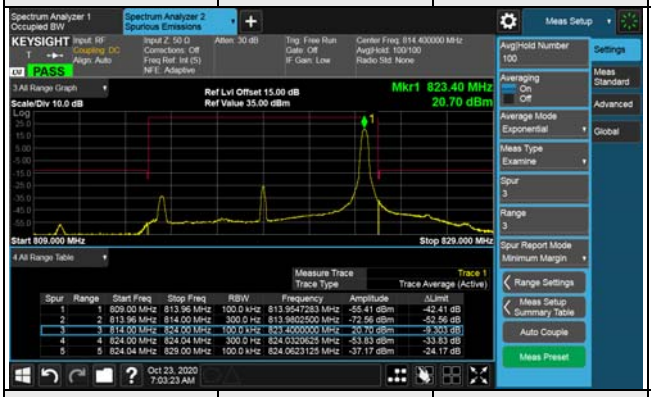
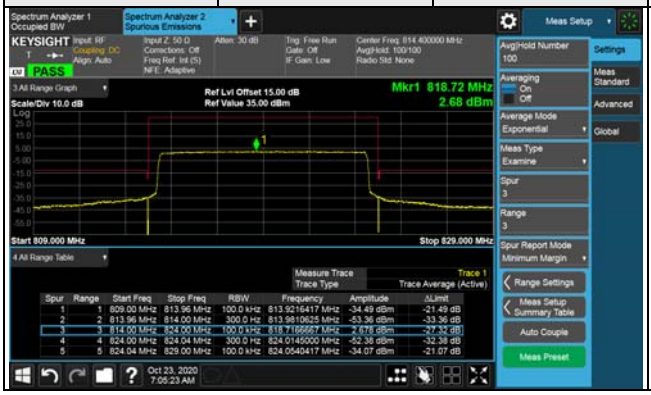
LTE Band 26					
Channel Bandwidth: 1.4 MHz / QPSK					
Channel	26783	1 RB 0			
					
Channel	26783	1 RB 5			
					
Channel	26783	Full RB			
					

LTE Band 26					
Channel Bandwidth: 3 MHz / QPSK					
Channel	26705	1 RB 0	Channel	26740	1 RB 0
					
Channel	26705	1 RB 14	Channel	26740	1 RB 14
					
Channel	26705	Full RB	Channel	26740	Full RB
					

LTE Band 26					
Channel Bandwidth: 3 MHz / QPSK					
Channel	26775	1 RB 0			
					
Channel	26775	1 RB 14			
					
Channel	26775	Full RB			
					

LTE Band 26					
Channel Bandwidth: 5 MHz / QPSK					
Channel	26715	1 RB 0	Channel	26740	1 RB 0
					
Channel	26715	1 RB 24	Channel	26740	1 RB 24
					
Channel	26715	Full RB	Channel	26740	Full RB
					

LTE Band 26					
Channel Bandwidth: 5 MHz / QPSK					
Channel	26765	1 RB 0			
					
Channel	26765	1 RB 24			
					
Channel	26765	Full RB			
					

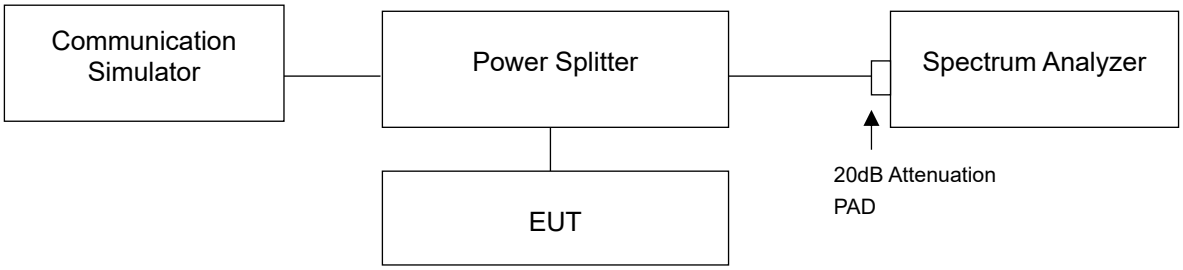
LTE Band 26					
Channel Bandwidth: 10 MHz / QPSK					
Channel	26740	1 RB 0			
					
Channel	26740	1 RB 49			
					
Channel	26740	Full RB			
					

4.6 Conducted Spurious Emissions

4.6.1 Limits of Conducted Spurious Emissions 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 log10(P) dB. The limit of emission equal to –13dBm.

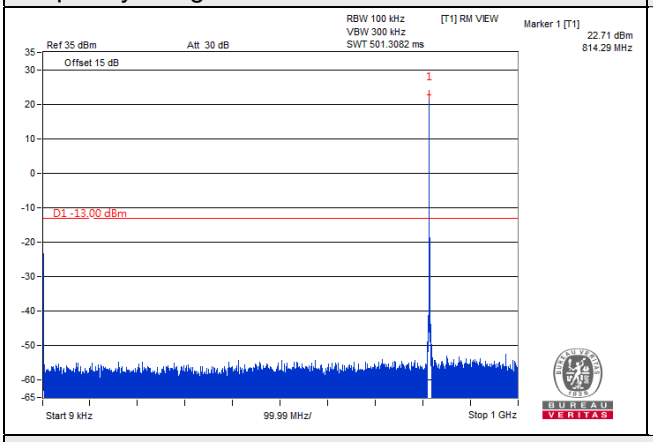
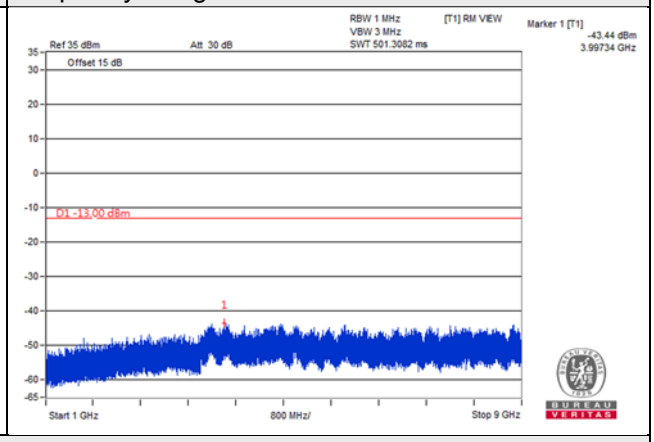
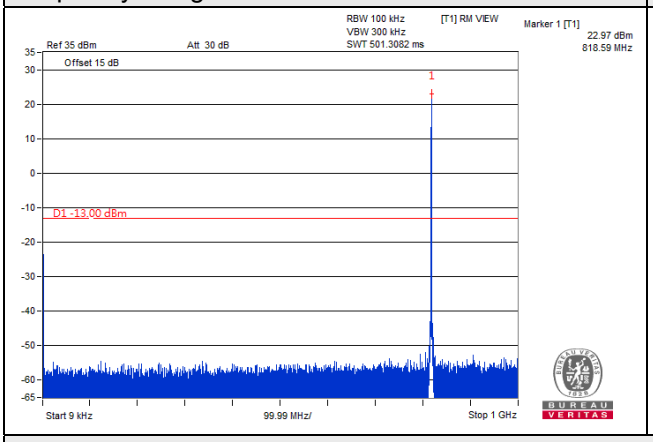
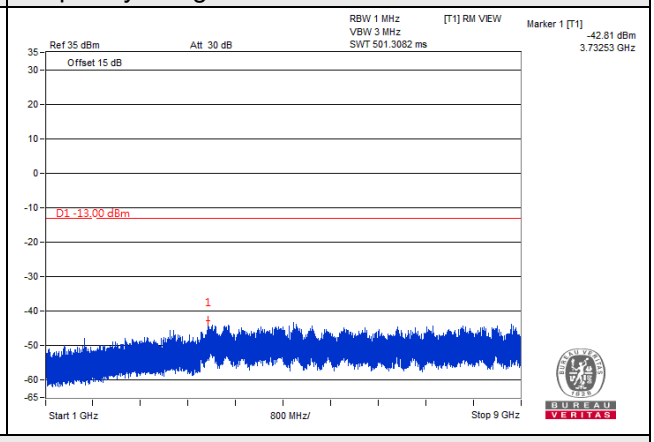
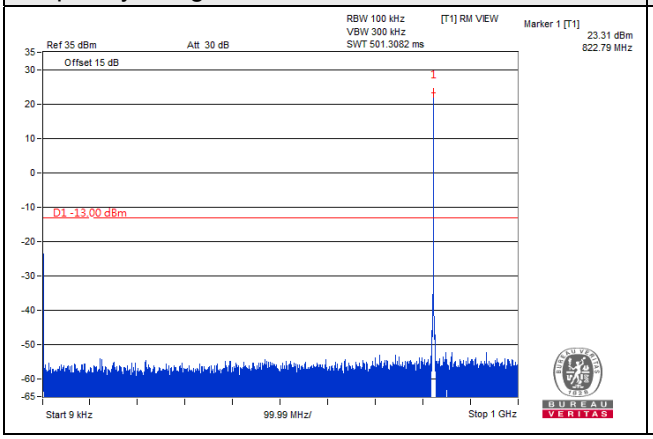
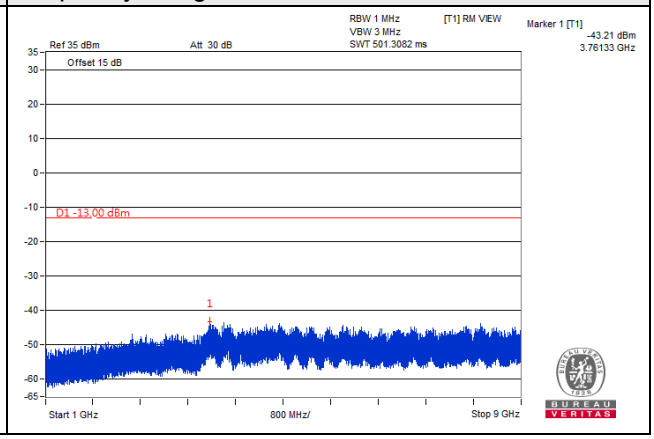
4.6.2 Test Setup

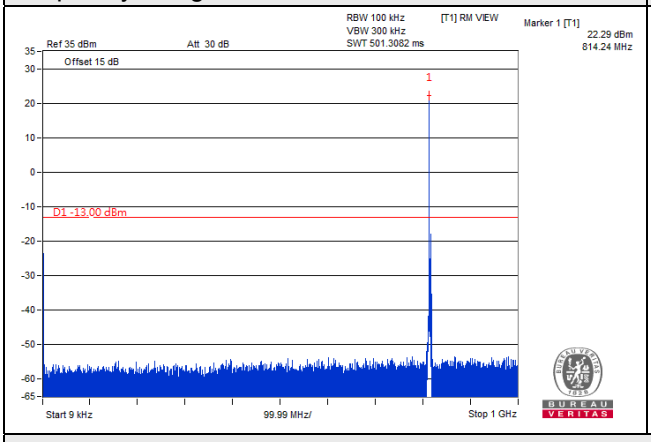
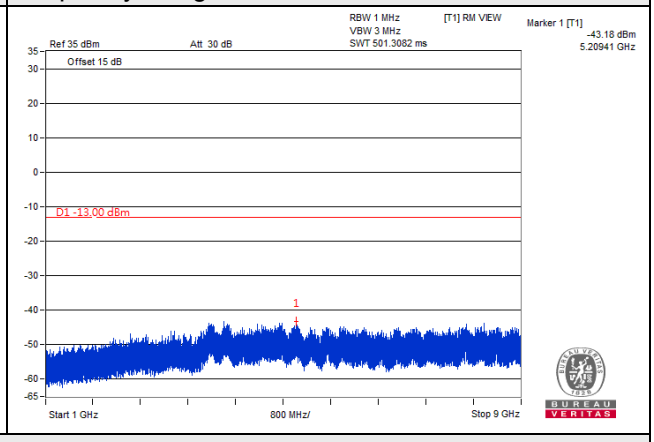
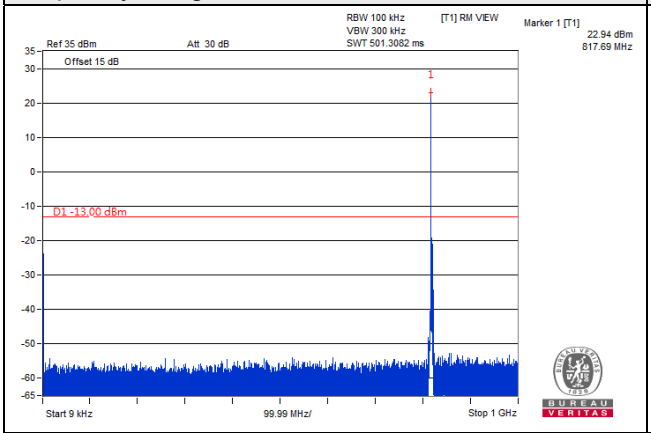
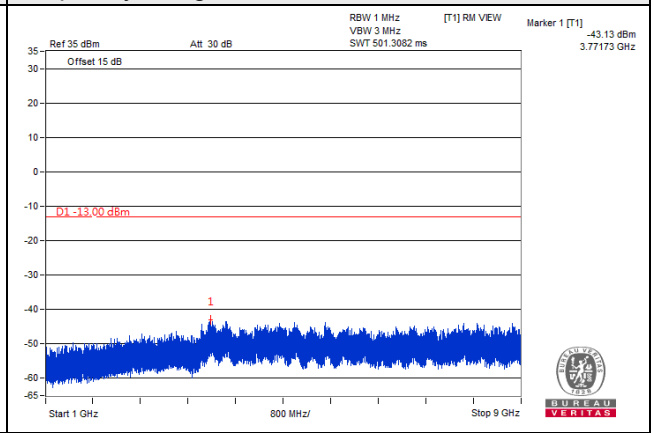
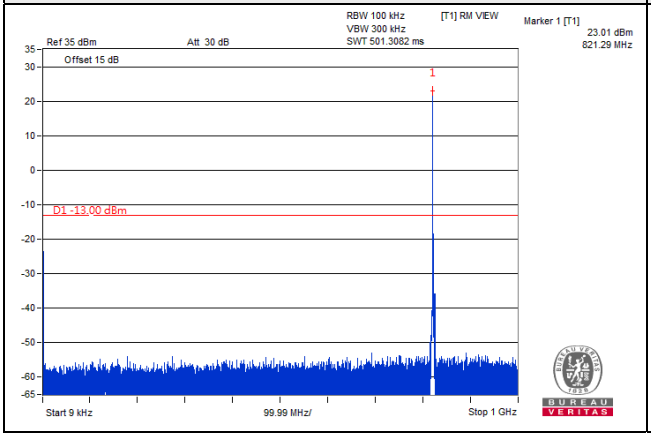
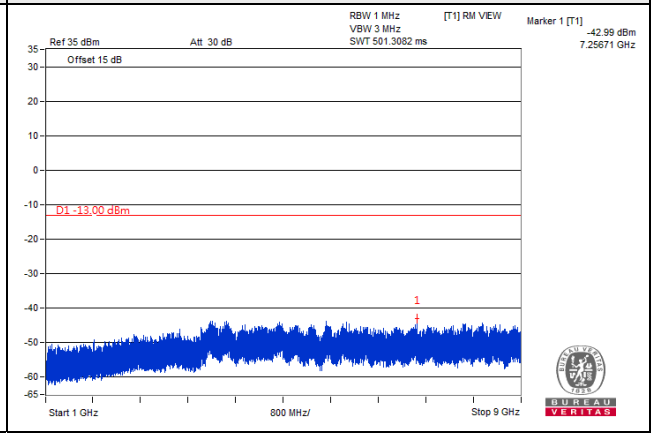


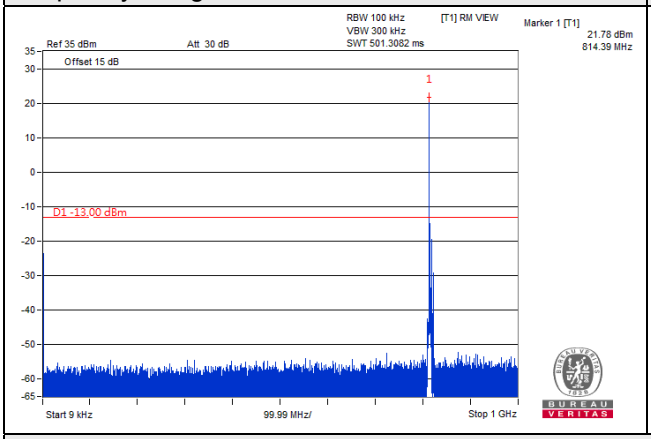
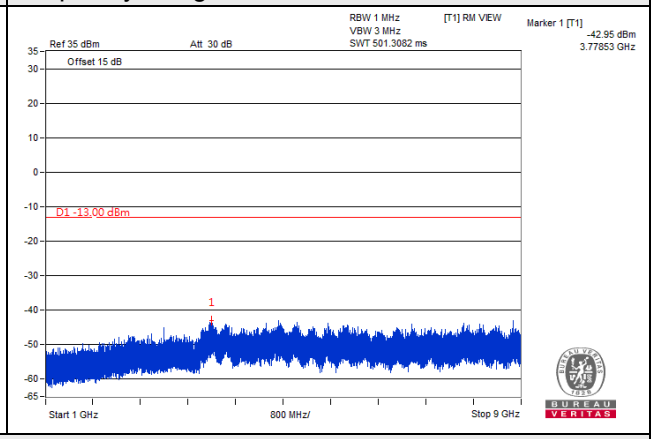
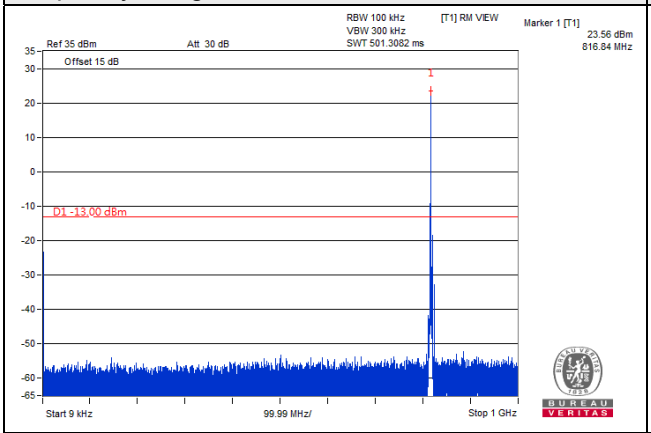
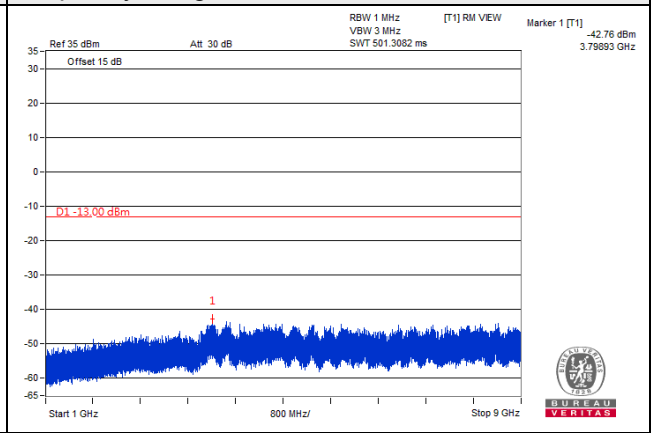
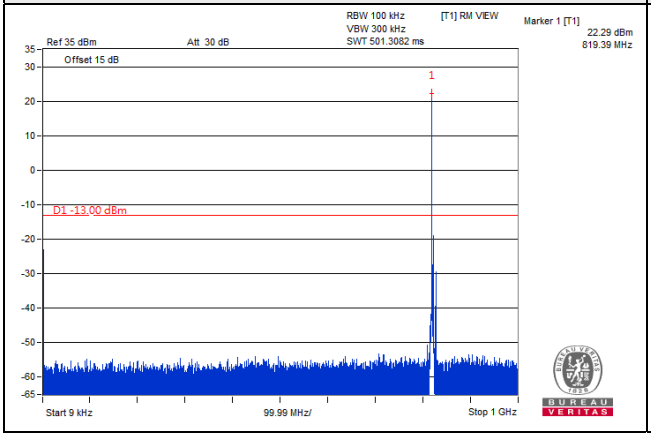
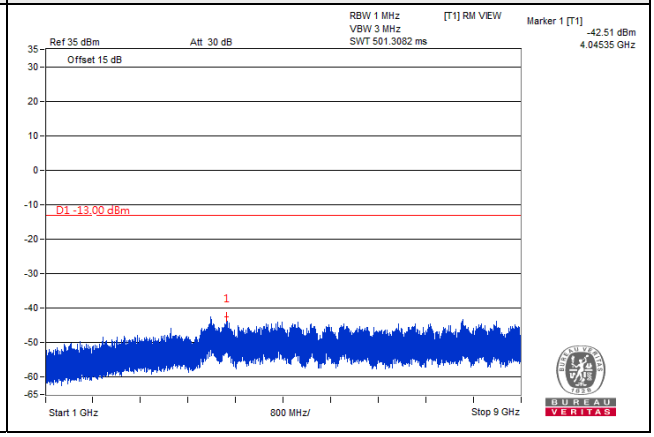
4.6.3 Test Procedure

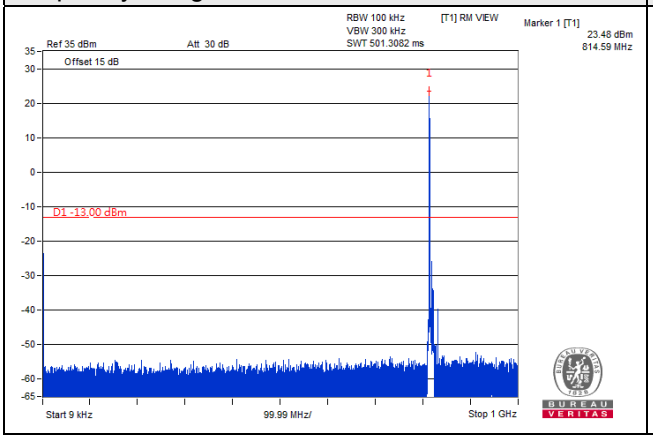
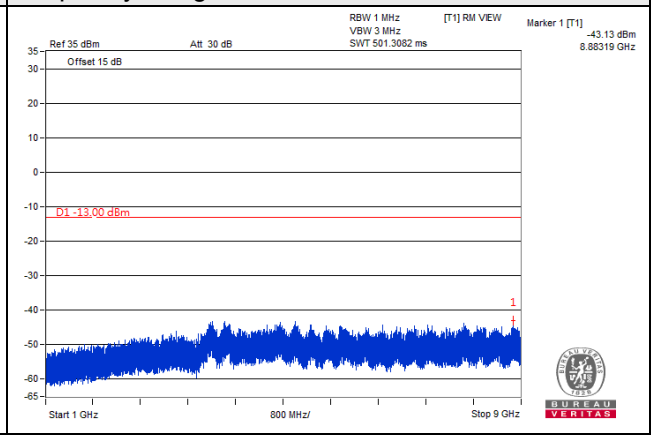
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 1GHz. 20dB attenuation pad is connected with spectrum. RBW=100kHz and VBW=300kHz is used for conducted emission measurement.
c. Measuring frequency range is from 1GHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

4.6.4 Test Results

LTE Band 26, Channel Bandwidth 1.4MHz	
Channel 26697 (814.7MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 26740 (819.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 26783 (823.3MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	

LTE Band 26, Channel Bandwidth 3MHz	
Channel 26705 (815.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 26740 (819.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 26775 (822.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	

LTE Band 26, Channel Bandwidth 5MHz	
Channel 26715 (816.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 26740 (819.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	
Channel 26765 (821.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	

LTE Band 26, Channel Bandwidth 10MHz	
Channel 26740 (819.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 9GHz
	

4.7 Radiated Emission Measurement

4.7.1 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 equal to –13dBm.

4.7.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m 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 1m to 4m 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. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss. Measurement method refers to ANSI C63.26 section 5.5.3.2.
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.R.P power - 2.15dBi.

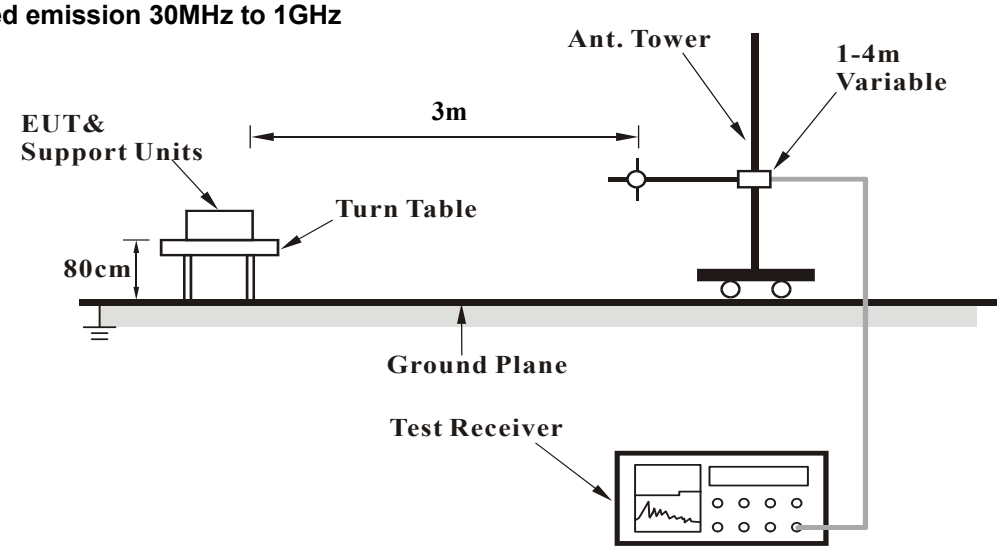
Note:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
   The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.7.3 Deviation from Test Standard

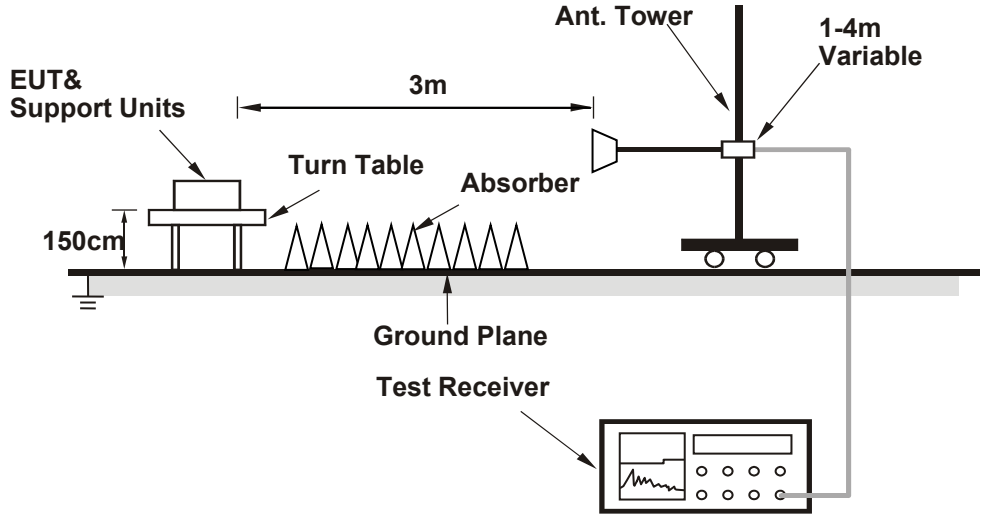
No deviation.

4.7.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



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

4.7.5 Test Results

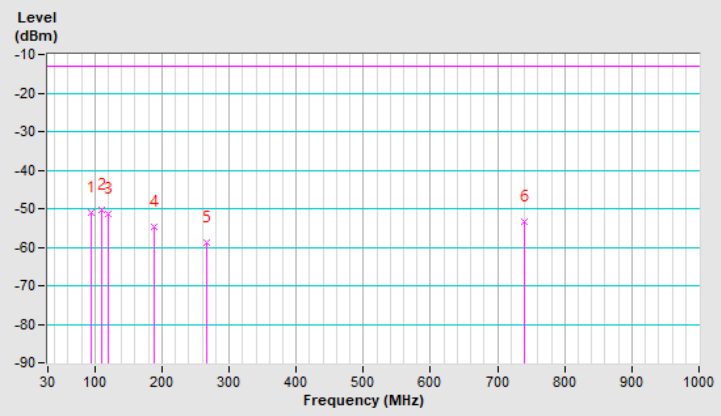
Below 1GHz
LTE Band 26, Channel Bandwidth 1.4MHz

Mode	TX channel 26697 (814.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	94.67	-50.99	-13.00	-37.99	2.00 H	115	60.44	-111.43
2	110.13	-50.29	-13.00	-37.29	1.00 H	85	58.92	-109.21
3	119.97	-51.31	-13.00	-38.31	1.49 H	86	56.98	-108.29
4	187.45	-54.79	-13.00	-41.79	2.00 H	80	53.22	-108.01
5	266.17	-58.77	-13.00	-45.77	1.49 H	248	46.63	-105.40
6	739.93	-53.37	-13.00	-40.37	1.49 H	327	40.94	-94.31

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.

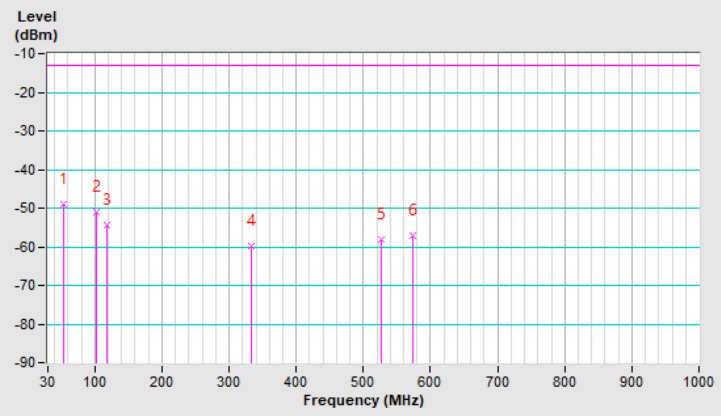


Mode	TX channel 26697 (814.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	**52.49**	**-49.08**	**-13.00**	**-36.08**	**1.01 V**	**34**	**57.37**	**-106.45**
2	101.70	-51.09	-13.00	-38.09	2.00 V	134	59.26	-110.35
3	118.57	-54.28	-13.00	-41.28	1.01 V	98	54.16	-108.44
4	333.65	-59.92	-13.00	-46.92	2.00 V	14	43.36	-103.28
5	527.65	-58.11	-13.00	-45.11	1.01 V	3	41.03	-99.14
6	574.04	-57.21	-13.00	-44.21	1.51 V	274	40.88	-98.09

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
LTE Band 26, Channel Bandwidth 1.4MHz

Mode	TX channel 26697 (814.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	-52.40	-13.00	-39.40	2.49 H	147	50.40	-102.80
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	-54.50	-13.00	-41.50	1.15 V	337	48.30	-102.80

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.

Mode	TX channel 26740 (819.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	-53.70	-13.00	-40.70	2.45 H	139	49.10	-102.80
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	-56.60	-13.00	-43.60	1.00 V	331	46.20	-102.80

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.

Mode	TX channel 26783 (823.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	-52.60	-13.00	-39.60	1.80 H	145	50.00	-102.60
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	-55.10	-13.00	-42.10	1.47 V	333	47.50	-102.60

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.

LTE Band 26, Channel Bandwidth 5MHz

Mode	TX channel 26715 (816.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	-54.50	-13.00	-41.50	1.52 H	159	48.30	-102.80
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	-56.60	-13.00	-43.60	1.20 V	333	46.20	-102.80

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.

Mode	TX channel 26740 (819MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	-55.00	-13.00	-42.00	1.52 H	158	47.80	-102.80
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	-57.10	-13.00	-44.10	1.21 V	339	45.70	-102.80

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.

Mode	TX channel 26765 (821.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	-53.90	-13.00	-40.90	1.52 H	211	48.70	-102.60
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	-56.00	-13.00	-43.00	1.00 V	203	46.60	-102.60

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.

LTE Band 26, Channel Bandwidth 10MHz

Mode	TX channel 26740 (819.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

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	-54.80	-13.00	-41.80	1.52 H	157	48.00	-102.80
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	-57.60	-13.00	-44.60	1.00 V	205	45.20	-102.80

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 and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Fax: 886-2-26051924

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Fax: 886-3-6668323

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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