

FCC Radio Test Report

FCC ID: KA2WR920VA1

This report concerns (check one): Original Grant Class I Change Class II Change

Project No. : 1901H008B
Equipment : U.S. Cellular Home Phone
Model Name : DWR-920V
Series Model : N/A
Applicant : D-Link Corporation
Address : No.289, Xinhua 3rd Rd., Neihu District, Taipei 11494, Taiwan

Date of Receipt : Jan. 22, 2019
Mar. 20, 2019
Date of Test : Jan. 22, 2019~ Jan. 28, 2019
Mar. 25, 2019~ Mar. 26, 2019
Issued Date : May. 13, 2019
Tested by : BTL Inc.

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Certificate #5123.02

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The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue. This is a supplementary report to the original test report (BTL-FCCP-1-1901H008). In this report only records the test results of AC/DC ADAPTER: AD120A120100UV.	Apr. 03, 2019
R01	Revised report to address TCB's comments as below: This is a supplementary report to the original test report of BTL-FCCP-2-1901H008, but it does not issue. In this report, records all the test results.	May. 13, 2019

1. GENERAL SUMMARY

Equipment : U.S. Cellular Home Phone
Brand Name : N/A
Model Name : DWR-920V
Series Model : N/A
Applicant : D-Link Corporation
Manufacturer : D-Link Corporation
Address : No.289, Xinhua 3rd Rd., Neihu District, Taipei 11494, Taiwan
Date of Test : Jan. 22, 2019~ Jan. 28, 2019
Test Sample : Engineering Sample No.: B190100025
Standard(s) : 47 CFR FCC Part 22 Subpart H
47 CFR FCC Part 2
ANSI/TIA/EIA-603-E-2016
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1901H008B) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

Test result included in this report is only for the LTE Band 5 part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 22 Subpart H & Part 2			
Standard(s) Section	Test Item	Judgment	Tested By
2.1046 22.913(a)	Radiated power	PASS	Paul Li
2.1046 22.913(a)	Maximum Output Power	PASS	Paul Li
2.1049(h) 22.917(a)	Occupied Bandwidth	PASS	Paul Li
2.1051 22.917(a)	Conducted Spurious Emissions	PASS	Paul Li
2.1053 22.917(a)	Radiated Spurious Emissions	PASS	Paul Li
22.917(a)	Band Edge Measurements	PASS	Paul Li
-	Peak To Average Ratio	PASS	Paul Li
2.1055 22.355	Frequency Stability	PASS	Paul Li

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

A. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	3.82
		30MHz ~ 200MHz	H	3.78
		200MHz ~ 1,000MHz	V	4.10
		200MHz ~ 1,000MHz	H	4.06

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03	CISPR	1GHz ~ 18GHz	V	3.12
		1GHz ~ 18GHz	H	3.68
		18GHz ~ 40GHz	V	4.15
		18GHz ~ 40GHz	H	4.14

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	U.S. Cellular Home Phone		
Brand Name	N/A		
Model Name	DWR-920V		
Series Model	N/A		
Model Difference(s)	N/A		
Hardware Version	A1		
Software Version	01.01		
Antenna Type	External Antenna		
Antenna Gain	-0.827088 dBi		
IMEI No.	357471055275665		
Modulation Type	LTE	UL: QPSK,16QAM DL: QPSK,16QAM	
Operation Frequency	LTE 5 (Channel Bandwidth: 1.4MHz)	824.7 MHz ~ 848.3 MHz	
	LTE 5 (Channel Bandwidth: 3MHz)	825.5 MHz ~ 847.5 MHz	
	LTE 5 (Channel Bandwidth: 5MHz)	826.5 MHz ~ 846.5 MHz	
	LTE 5 (Channel Bandwidth: 10MHz)	829.0 MHz ~ 844.0 MHz	
Max. ERP Power	LTE 5 (Channel Bandwidth: 1.4MHz)	QPSK	19.58 dBm
		16QAM	18.37 dBm
	LTE 5 (Channel Bandwidth: 3MHz)	QPSK	19.82 dBm
		16QAM	18.90 dBm
	LTE 5 (Channel Bandwidth: 5MHz)	QPSK	19.67 dBm
		16QAM	18.31 dBm
LTE 5 (Channel Bandwidth: 10MHz)	QPSK	19.65 dBm	
	16QAM	18.74 dBm	
Power Source	DC voltage supplied from AC/DC adapter. Model: 1#: AMS135-1201000FU 2#: AD120A120100UV		
Power Rating	I/P: 1#:100-240V~,50/60Hz,0.5A O/P:12V $\overline{\text{---}}$ 1.0A 2#:100-240V~,50-60Hz,0.4A MAX O/P:12V $\overline{\text{---}}$ 1.0A		

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

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 X-plane for EIRP and X-axis for radiated emission.
 Following channel(s) was (were) selected for the final test as listed below:

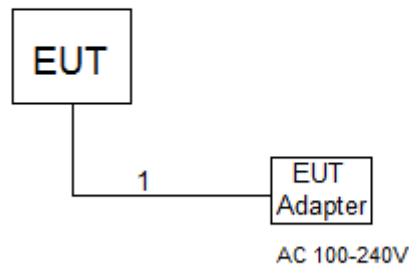
LTE BAND 5					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1RB/3RB/6RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1RB/8RB/15RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1RB/25RB/50RB
Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	6 RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	15 RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	25 RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	50 RB
Conducted Emission	20407 to 20643	20525	1.4MHz	QPSK	1 RB
	20425 to 20625	20525	5MHz	QPSK	1 RB
	20450 to 20600	20525	10MHz	QPSK	1 RB
Radiated Emission	20407 to 20643	20525	1.4MHz	QPSK	1 RB
	20425 to 20625	20525	5MHz	QPSK	1 RB
	20450 to 20600	20525	10MHz	QPSK	1 RB
Band Edge	20407 to 20643	20407	1.4MHz	QPSK	1 RB
		20643	1.4MHz	QPSK	6 RB
	20415 to 20635	20415	3MHz	QPSK	1 RB
		20635	3MHz	QPSK	15 RB
	20425 to 20625	20425	5MHz	QPSK	1 RB
		20625	5MHz	QPSK	25 RB
	20450 to 20600	20450	10MHz	QPSK	1 RB
		20600	10MHz	QPSK	50 RB

Peak To Average Ratio	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1 RB
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1 RB
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1 RB
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB
Frequency Stability	20407 to 20643	20525	1.4MHz	QPSK	1 RB
	20415 to 20635	20525	3MHz	QPSK	1 RB
	20425 to 20625	20525	5MHz	QPSK	1 RB
	20450 to 20600	20525	10MHz	QPSK	1 RB

EUT TEST CONDITIONS:

Test Item	Environmental Conditions	Test Voltage
ERP	22°C, 45%RH	DC 12V
Maximum Output Power	22°C, 45%RH	DC 12V
Occupied Bandwidth	22°C, 45%RH	DC 12V
Conducted Emission	22°C, 45%RH	DC 12V
Radiated Emission	22°C, 45%RH	AC 120V/60Hz
Band Edge	22°C, 45%RH	DC 12V
Peak to Average Ratio	22°C, 45%RH	DC 12V
Frequency Stability	Normal and Extreme	Normal and Extreme

3.3 BLOCKDIGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED FOR RADIATED



3.4 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.2m	DC Cable

4. TEST RESULT

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMIT

Mobile / Portable station are limited to 7 watts e.r.p.

4.1.2 TEST PROCEDURE

EURP/ ERP:

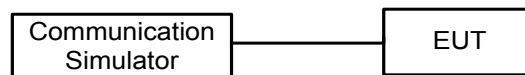
1. ERP power= EIPR power-2.15dBi.

Maximum Output Power:

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 TESTSETUP LAYOUT

Output Power Measurement



4.1.4 TEST DEVIATION

No deviation

4.1.5 TEST RESULTS

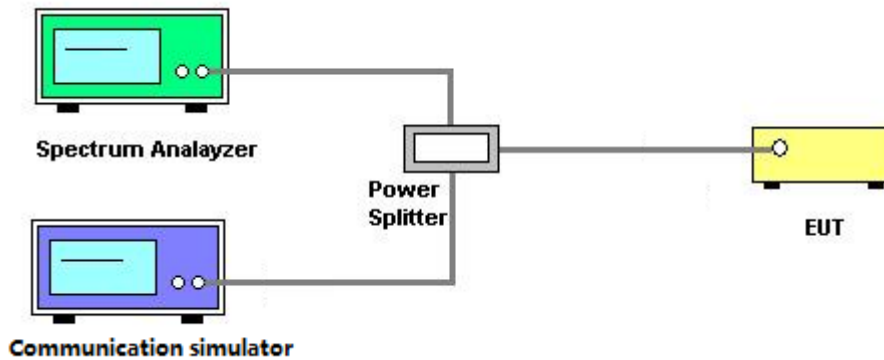
Please refer to the Appendix A.

4.2 OCCUPIED BANDWIDTH MEASUREMENT

4.2.1 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. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.

4.2.2 TEST SETUP LAYOUT



4.2.3 TEST DEVIATION

No deviation

4.2.4 TEST RESULTS

Please refer to the Appendix B.

4.3 CONDUCTED EMISSIONS MEASUREMENT

4.3.1 LIMIT

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. The emission limit equal to -13dBm .

4.3.2 TEST PROCEDURES

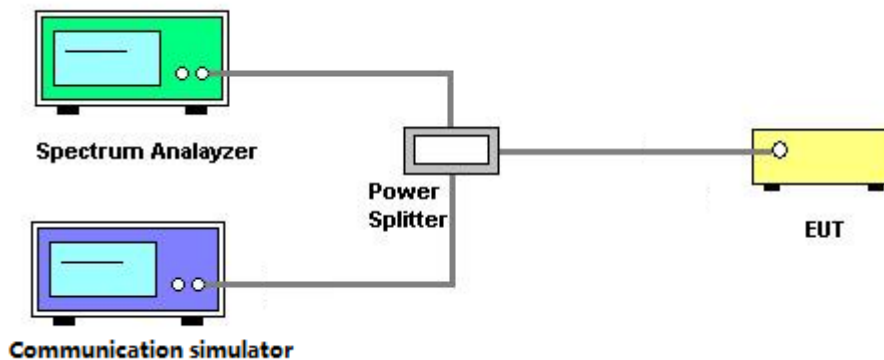
1. The testing follows FCC KDB 971168 v03r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set $\text{RBW} \geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from $43+10\log(P)\text{dB}$ below the transmitter power P(Watts)

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

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

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

4.3.3 TESTSETUP LAYOUT



4.3.4 TESTDEVIATION

No deviation

4.3.5 TEST RESULTS

Please refer to the Appendix C.

4.4 RADIATED EMISSIONS MEASUREMENT

4.4.1 LIMIT

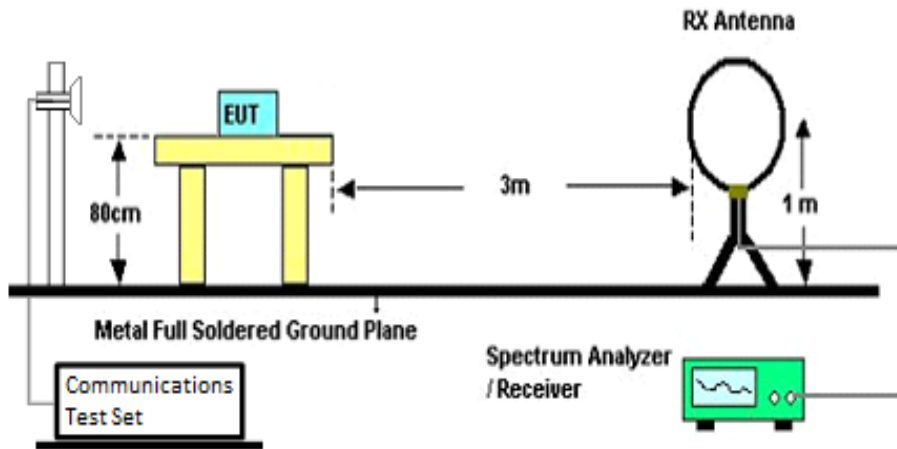
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

4.4.2 TEST PROCEDURES

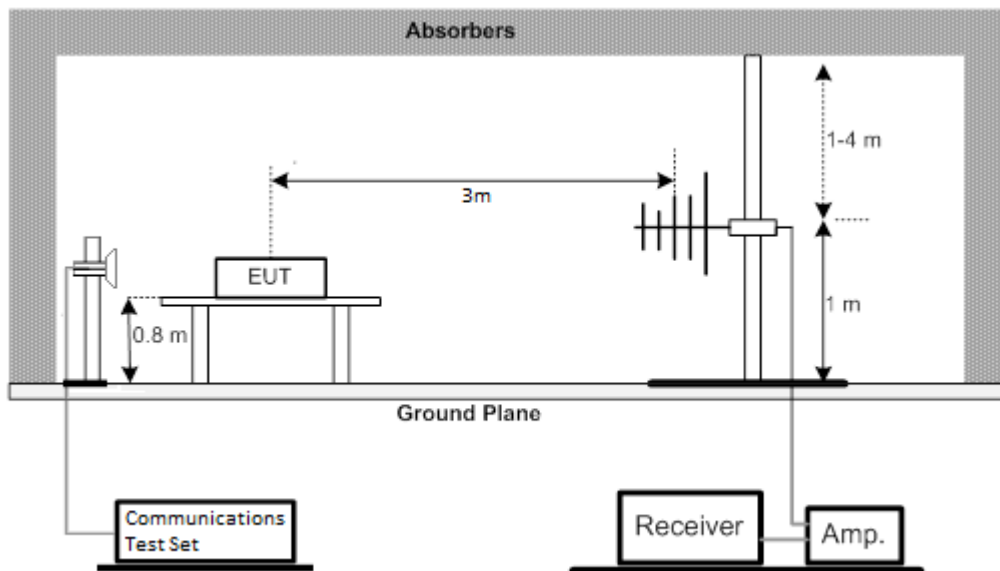
1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
3. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
4. 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 - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.4.3 TESTSETUP LAYOUT

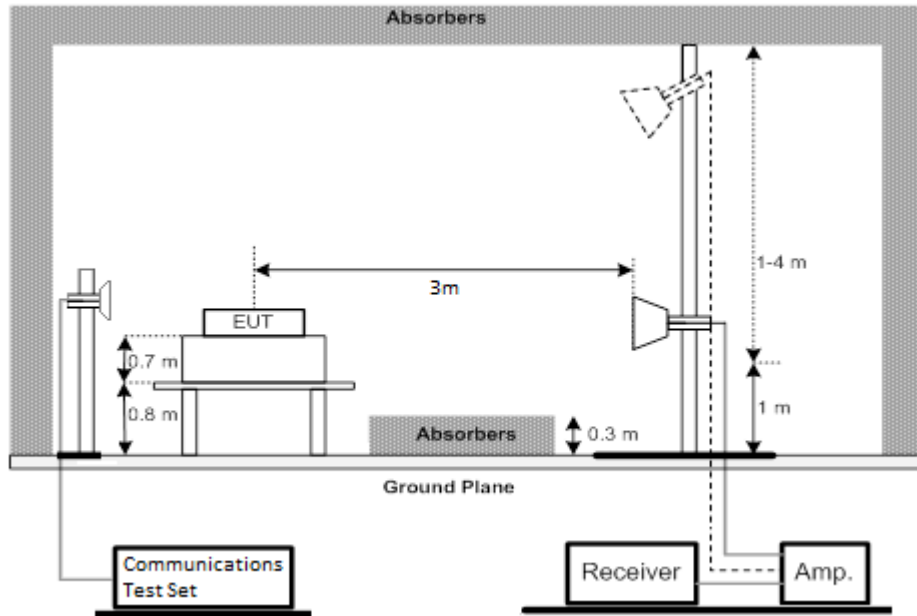
Below 30MHz



30MHz to 1GHz



Above 1GHz



4.4.4 TEST DEVIATION

No deviation

4.4.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Appendix D.

4.4.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the Appendix E.

4.4.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the Appendix F.

4.5 BAND EDGE MEASUREMENT

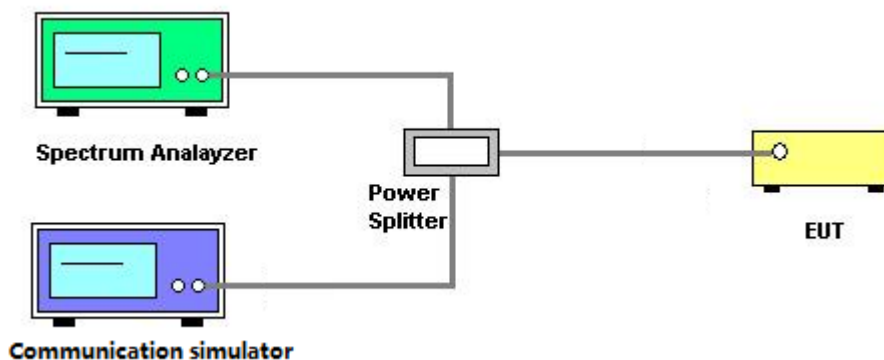
4.5.1 LIMIT

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

4.5.2 TEST PROCEDURES

1. All measurements were done at low and high operational frequency range.
2. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 15kHz and VB of the spectrum is 43kHz (LTE Bandwidth 1.4MHz).
3. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 30kHz and VB of the spectrum is 91kHz (LTE Bandwidth 3MHz).
4. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (LTE Bandwidth 5MHz).
5. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Bandwidth 10MHz).
6. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Bandwidth 15MHz).
7. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 200kHz and VB of the spectrum is 620kHz (LTE Bandwidth 20MHz).
8. Record the max trace plot into the test report.

4.5.3 TESTSETUP LAYOUT



4.5.4 TESTDEVIATION

No deviation

4.5.5 TEST RESULTS

Please refer to the Appendix G.

4.6 PEAK TO AVERAGE RATIO MEASUREMENT

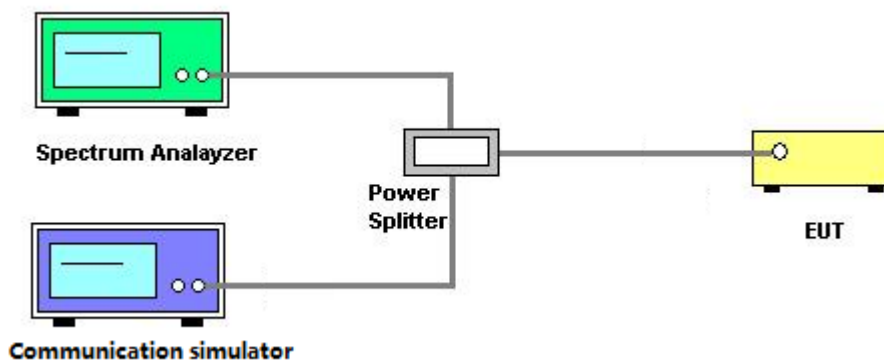
4.6.1 LIMIT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

4.6.2 TEST PROCEDURES

1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.6.3 TESTSETUP LAYOUT



4.6.4 TESTDEVIATION

No deviation

4.6.5 TEST RESULTS

Please refer to the Appendix H.

4.7 FREQUENCY STABILITY MEASUREMENT

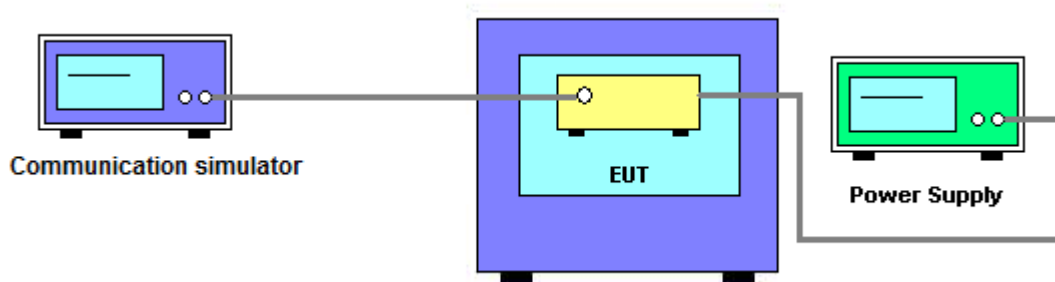
4.7.1 LIMIT

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

4.7.2 TEST PROCEDURES

1. 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.
2. 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.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ 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.
4. The frequency error was recorded frequency error from the communication simulator.

4.7.3 TESTSETUP LAYOUT



4.7.4 TESTDEVIATION

No deviation

4.7.5 TEST RESULTS

Please refer to the Appendix I.

5. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 09, 2020
2	Amplifier	Agilent	8449B	3008A02274	Mar. 10, 2020
3	Amplifier	HP	8447D	2944A09673	Aug. 11, 2019
4	HighPass Filter	Wairwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Mar. 10, 2020
5	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1710/1785-1690/180 5-60/12SS	38	Mar. 10, 2020
6	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 824/849-810/863-60/ 9SS	7	Mar. 10, 2020
7	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 880/915-860/935-60/ 9SS	14	Mar. 10, 2020
8	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1850/1910-1830/193 0-60/10SS	17	Mar. 10, 2020
9	HighPass Filter	Wairwright Instruments Gmbh	WHK3.1/18G-10SS	24	Mar. 10, 2020
10	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
11	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 10, 2020
12	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019
13	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020
14	Cable	emci	LMR-400(30MHz-1G Hz)(8m+5m)	N/A	May 25, 2019
15	Cable	mitron	B10-01-01-12M	18072744	Jul. 30, 2019
16	Controller	ETS-Lindgren	2090	N/A	N/A
17	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
18	Loop Antenna	EM	EM-6876-1	230	Jan. 15, 2020
19	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 09, 2020
20	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 30, 2019

Conducted Emission & Band Edge & Occupied Bandwidth Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 10, 2020
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Mar. 10, 2020
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020
5	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019

Frequency Stability Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
2*	Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Sep. 26, 2020
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Mar. 10, 2020
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

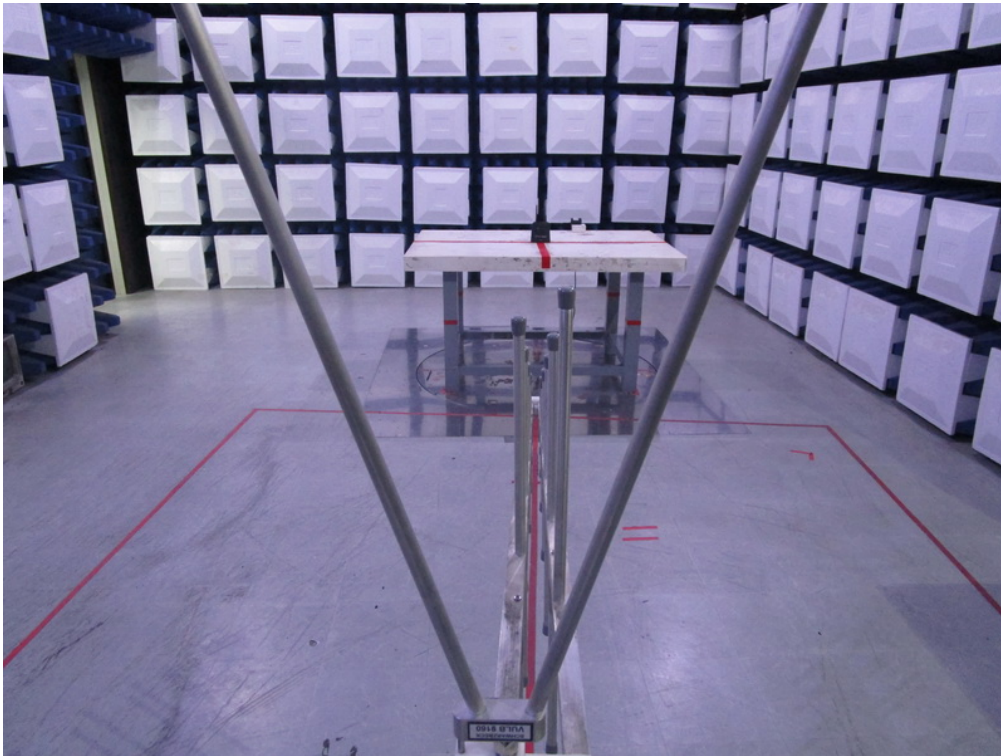
*All calibration period of equipment list is three year.

6. EUT TEST PHOTO

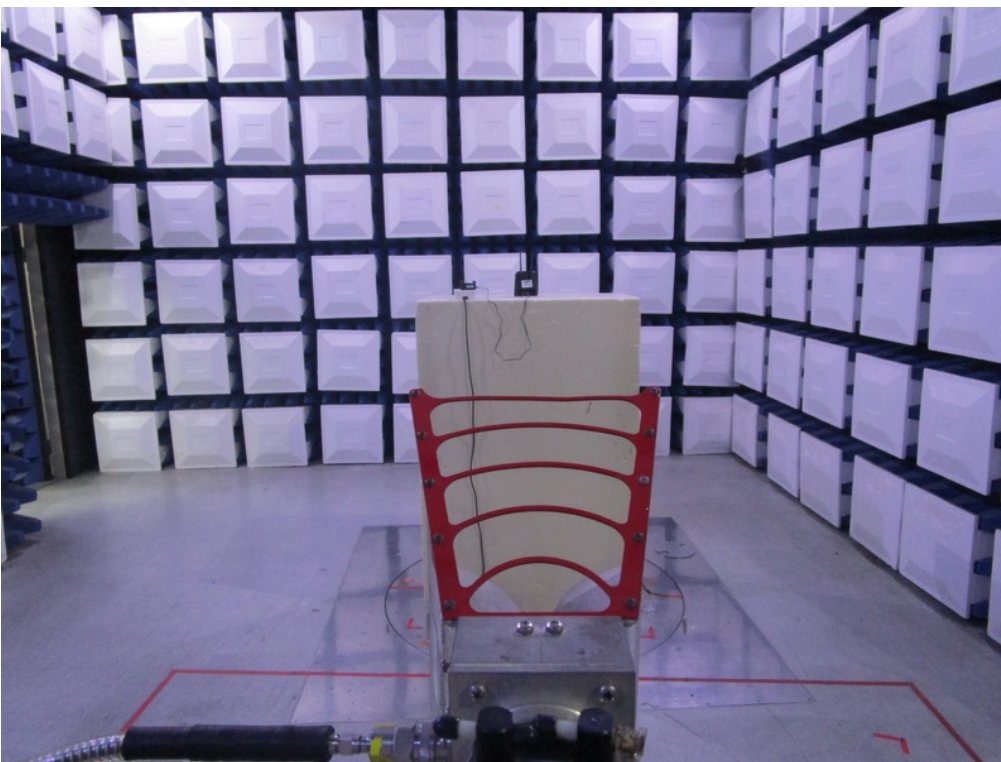
9 kHz to 30 MHz



30 MHz to 1 GHz



Above 1 GHz



APPENDIX A – MAXIMUM OUTPUT POWER

Maximum Output Power (dBm):

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	22.47	21.99	22.19
		1	2	22.41	22.09	21.94
		1	5	22.37	22.06	22.08
		3	0	22.48	22.21	22.07
		3	1	22.56	22.32	22.00
		3	2	22.45	22.27	21.98
		6	0	21.36	21.20	20.97
	16QAM	1	0	21.31	21.04	20.88
		1	2	21.34	21.01	21.15
		1	5	21.32	21.03	21.19
		3	0	21.11	20.67	20.78
		3	1	21.19	20.64	20.92
		3	2	21.15	20.59	20.83
		6	0	20.18	19.88	19.81

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	22.38	22.23	22.09
		1	7	22.80	22.31	22.30
		1	14	22.63	22.43	22.22
		8	0	21.47	21.27	20.92
		8	4	21.48	21.23	20.94
		8	7	21.36	21.33	21.09
		15	0	21.35	21.34	21.03
	16QAM	1	0	21.54	20.98	20.87
		1	7	21.88	21.57	21.06
		1	14	21.51	21.15	21.12
		8	0	20.49	20.24	19.78
		8	4	20.78	20.39	20.09
		8	7	20.48	20.48	19.98
		15	0	20.48	20.28	19.98

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	22.36	21.96	22.11
		1	13	22.64	22.06	22.20
		1	24	22.20	22.10	22.03
		12	0	21.41	21.34	21.09
		12	6	21.40	21.34	21.10
		12	11	21.31	21.42	21.11
		25	0	21.35	21.27	21.10
	16QAM	1	0	20.94	21.20	20.57
		1	13	20.86	21.17	20.38
		1	24	20.65	21.28	20.49
		12	0	20.41	20.10	20.00
		12	6	20.47	20.32	19.87
		12	11	20.31	20.31	19.79
		25	0	20.57	20.17	19.98

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	22.54	22.21	22.10
		1	25	22.59	22.63	22.16
		1	49	22.19	22.21	21.98
		25	0	21.37	21.18	21.28
		25	13	21.28	21.40	21.09
		25	25	21.19	21.37	21.03
		50	0	21.33	21.33	21.19
	16QAM	1	0	21.24	20.92	21.13
		1	25	21.71	21.02	21.03
		1	49	21.13	20.90	20.93
		25	0	20.36	20.24	20.25
		25	13	20.16	20.38	20.15
		25	25	20.27	20.28	20.04
		50	0	20.39	20.19	20.18

ERP Power (dBm):

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20407CH	20525CH	20643CH
				824.7MHz	836.5MHz	848.3MHz
5 / 1.4M	QPSK	1	0	19.50	19.01	19.21
		1	2	19.43	19.11	18.96
		1	5	19.39	19.09	19.10
		3	0	19.50	19.23	19.10
		3	1	19.58	19.34	19.03
		3	2	19.48	19.30	19.00
	16QAM	6	0	18.38	18.22	17.99
		1	0	18.33	18.06	17.91
		1	2	18.37	18.04	18.17
		1	5	18.35	18.06	18.21
		3	0	18.13	17.70	17.80
		3	1	18.21	17.67	17.95
		3	2	18.17	17.61	17.85
		6	0	17.20	16.90	16.83

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20415CH	20525CH	20635CH
				825.5MHz	836.5MHz	847.5MHz
5 / 3M	QPSK	1	0	19.40	19.26	19.11
		1	7	19.82	19.33	19.33
		1	14	19.66	19.46	19.25
		8	0	18.49	18.30	17.94
		8	4	18.50	18.25	17.96
		8	7	18.38	18.35	18.11
	16QAM	15	0	18.37	18.36	18.05
		1	0	18.56	18.01	17.90
		1	7	18.90	18.60	18.08
		1	14	18.53	18.17	18.15
		8	0	17.51	17.26	16.80
		8	4	17.81	17.42	17.11
		8	7	17.50	17.50	17.00
		15	0	17.50	17.30	17.00

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20425CH	20525CH	20625CH
				826.5MHz	836.5MHz	846.5MHz
5 / 5M	QPSK	1	0	19.38	18.98	19.13
		1	13	19.67	19.08	19.22
		1	24	19.22	19.13	19.05
		12	0	18.43	18.37	18.11
		12	6	18.42	18.36	18.12
		12	11	18.33	18.44	18.14
	16QAM	25	0	18.37	18.29	18.12
		1	0	17.96	18.23	17.59
		1	13	17.88	18.19	17.40
		1	24	17.67	18.31	17.52
		12	0	17.43	17.12	17.02
		12	6	17.49	17.34	16.89
		12	11	17.34	17.33	16.81
		25	0	17.59	17.19	17.00

LTE Band / BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20450CH	20525CH	20600CH
				829.0MHz	836.5MHz	844.0MHz
5 / 10M	QPSK	1	0	19.56	19.23	19.13
		1	25	19.62	19.65	19.18
		1	49	19.22	19.24	19.00
		25	0	18.40	18.20	18.30
		25	13	18.31	18.42	18.11
		25	25	18.21	18.39	18.06
		50	0	18.36	18.36	18.21
	16QAM	1	0	18.26	17.94	18.15
		1	25	18.74	18.04	18.05
		1	49	18.15	17.93	17.95
		25	0	17.38	17.26	17.27
		25	13	17.18	17.41	17.17
		25	25	17.29	17.31	17.07
		50	0	17.42	17.21	17.20

APPENDIX B - OCCUPIED BANDWIDTH

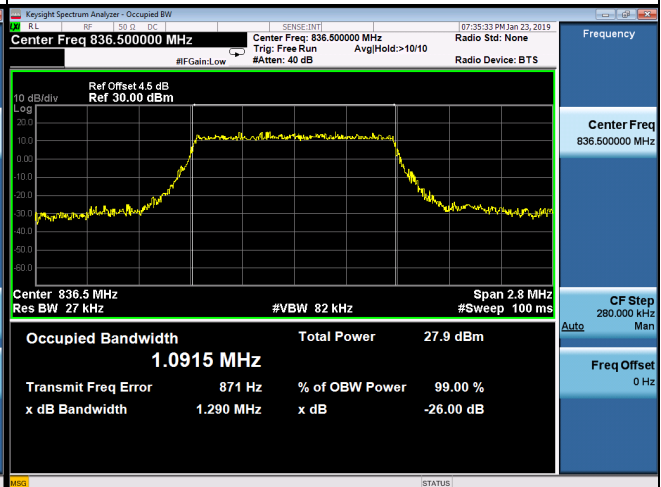
LTE Band 5_1.4M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20407	824.7	1.088	20407	824.7	1.090
20525	836.5	1.092	20525	836.5	1.082
20643	848.3	1.087	20643	848.3	1.092
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20407	824.7	1.322	20407	824.7	1.273
20525	836.5	1.290	20525	836.5	1.266
20643	848.3	1.289	20643	848.3	1.283

Spectrum Plot

QPSK-20407



QPSK-20525



QPSK-20643



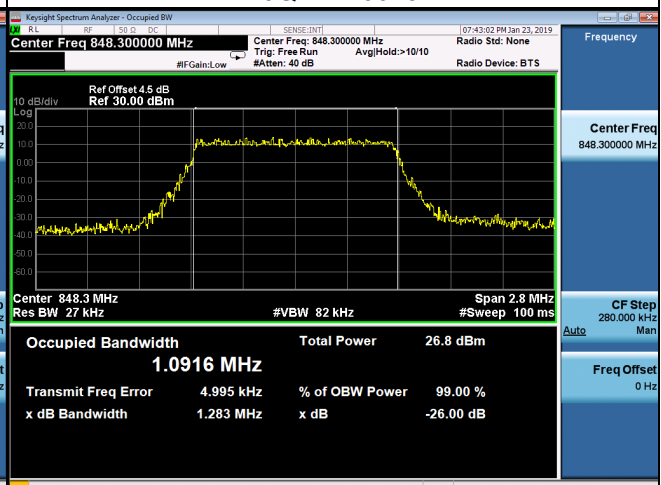
16QAM-20407



16QAM-20525

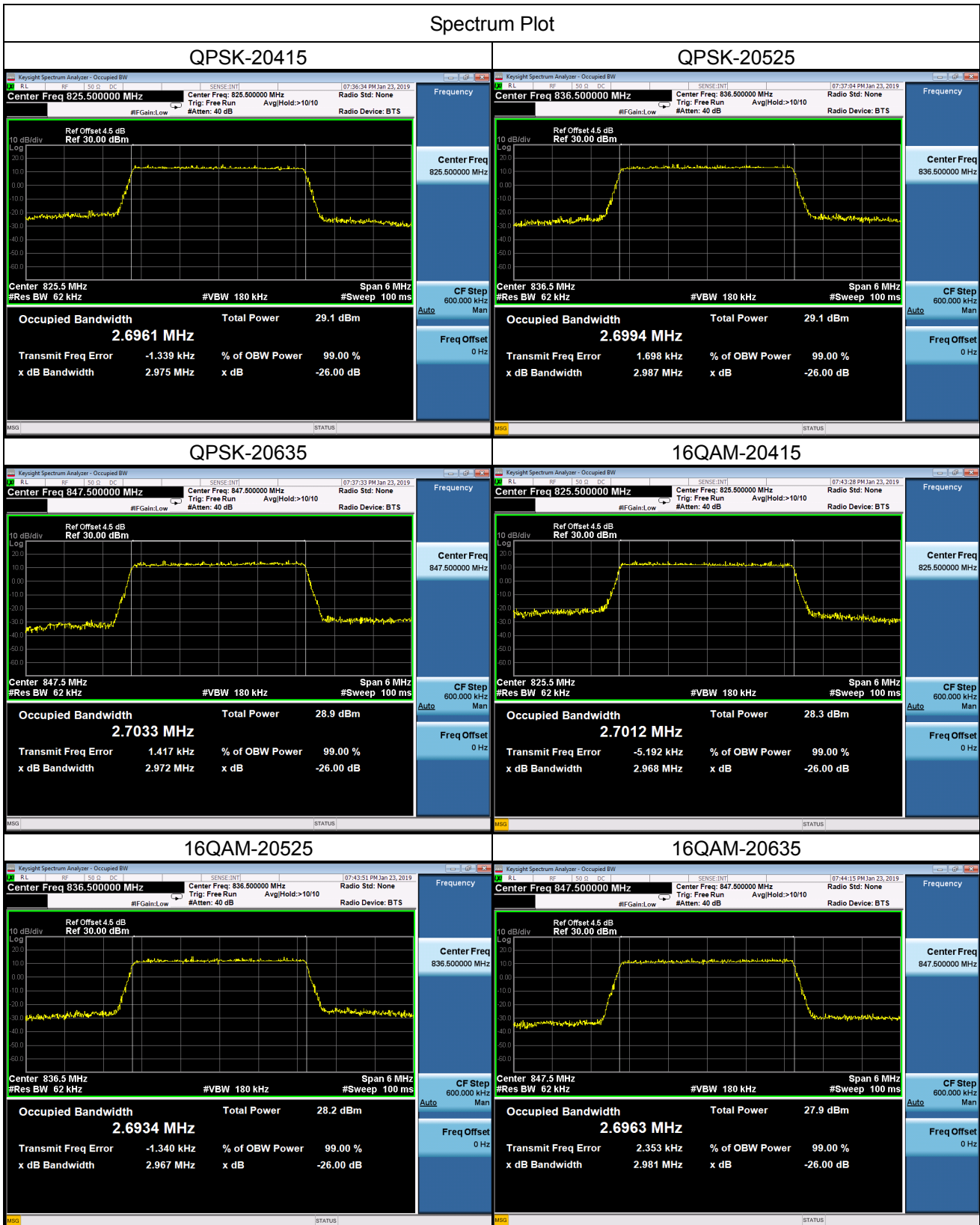


16QAM-20643



LTE Band 5_3M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20415	825.5	2.700	20415	825.5	2.701
20525	836.5	2.699	20525	836.5	2.693
20635	847.5	2.703	20635	847.5	2.696
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20415	825.5	2.975	20415	825.5	2.968
20525	836.5	2.987	20525	836.5	2.967
20635	847.5	2.972	20635	847.5	2.981

Spectrum Plot



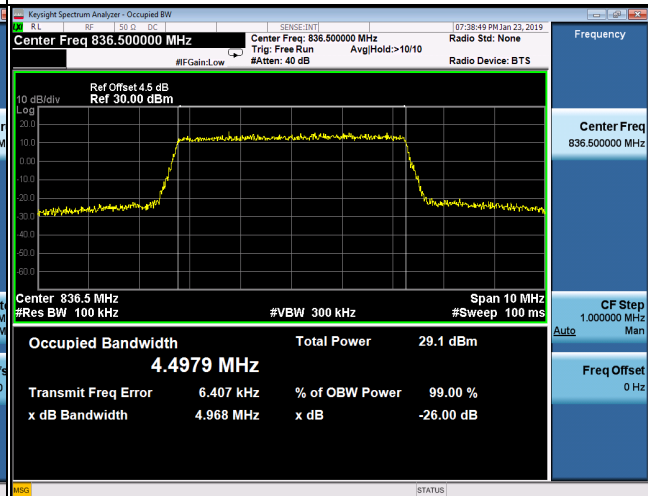
LTE Band 5_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20425	826.5	4.507	20425	826.5	4.515
20525	836.5	4.498	20525	836.5	4.495
20625	846.5	4.521	20625	846.5	4.505
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20425	826.5	5.056	20425	826.5	4.988
20525	836.5	4.968	20525	836.5	4.958
20625	846.5	4.940	20625	846.5	4.966

Spectrum Plot

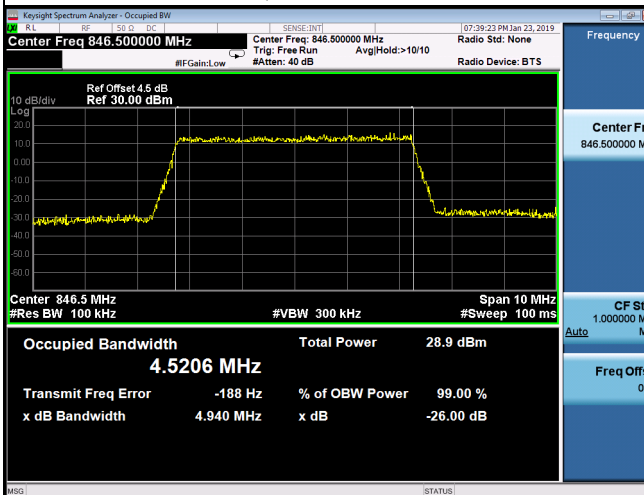
QPSK-20425



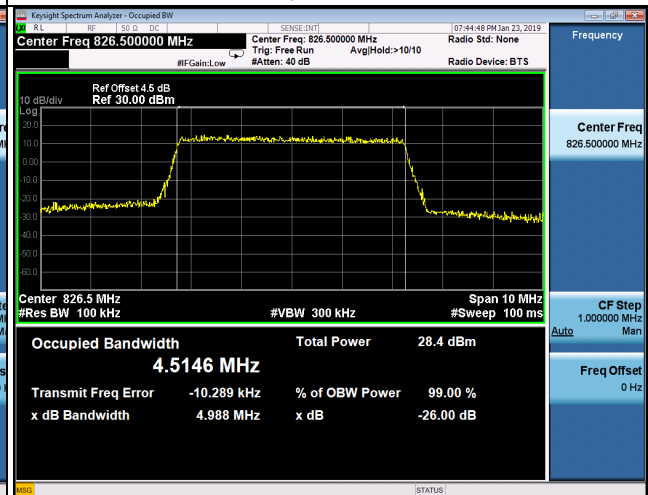
QPSK-20525



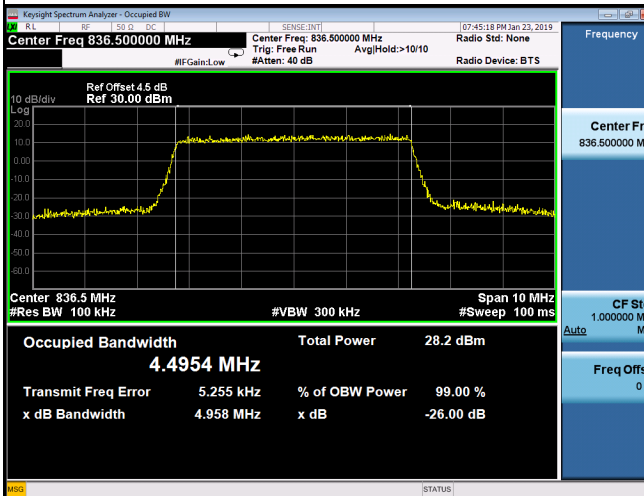
QPSK-20625



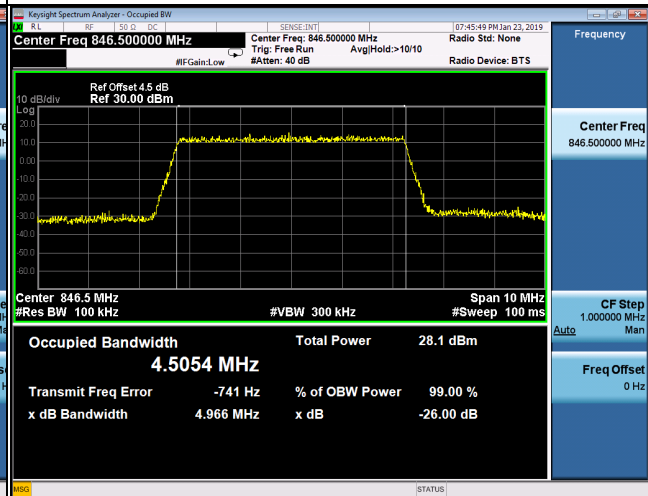
16QAM-20425



16QAM-20525



16QAM-20625



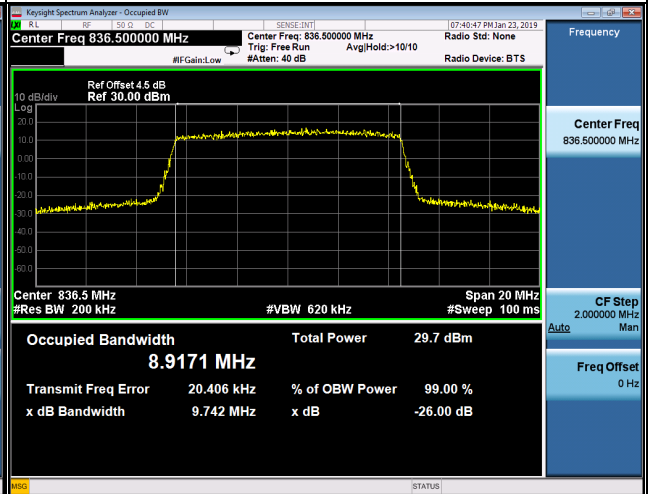
LTE Band 5_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
20450	829.0	8.990	20450	829.0	8.980
20525	836.5	8.917	20525	836.5	8.914
20600	844.0	8.993	20600	844.0	8.980
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
20450	829.0	9.995	20450	829.0	9.930
20525	836.5	9.742	20525	836.5	9.820
20600	844.0	9.956	20600	844.0	9.852

Spectrum Plot

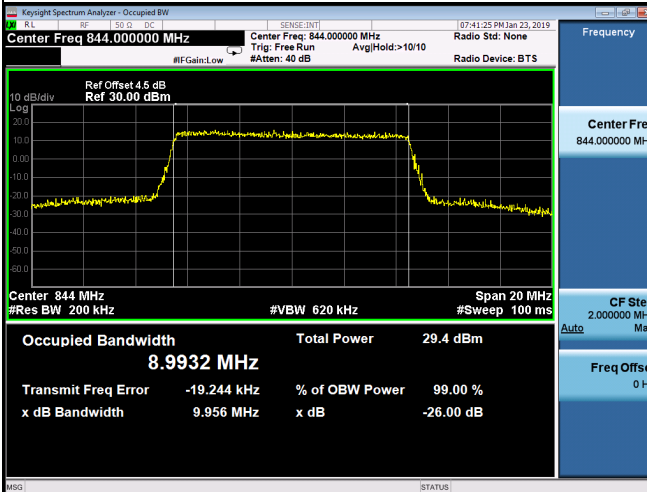
QPSK-20450



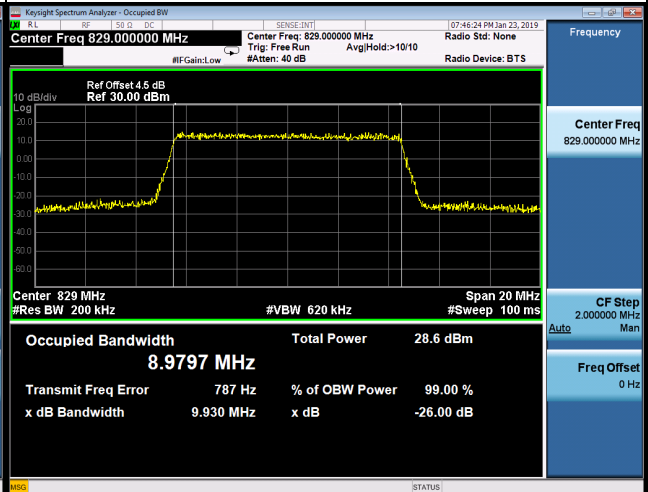
QPSK-20525



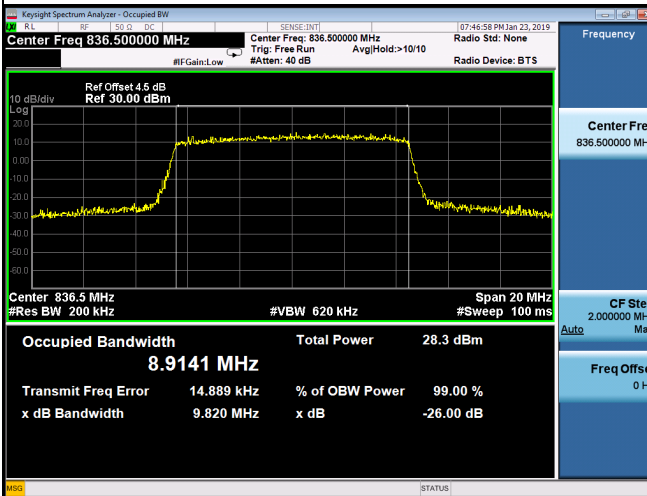
QPSK-20600



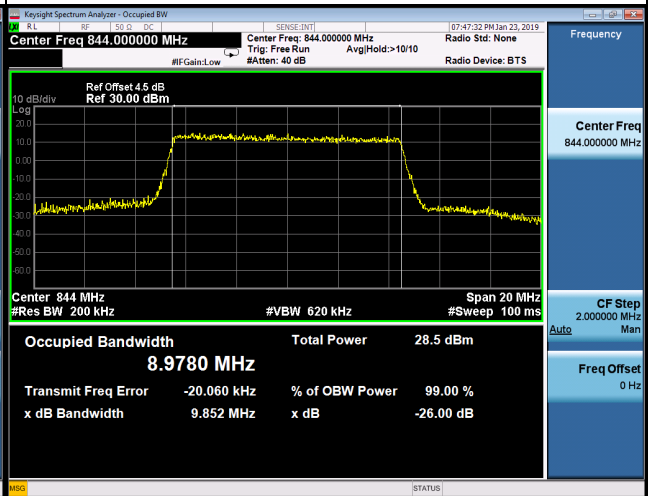
16QAM-20450



16QAM-20525



16QAM-20600



APPENDIX C - CONDUCTED EMISSIONS

LTE Band 5_1.4M

Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
<p>Date: 24.JAN.2019 13:16:20</p>		<p>Date: 24.JAN.2019 13:00:46</p>	
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
<p>Date: 27.JAN.2019 13:47:30</p>		-	

LTE Band 5_5M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
Date: 24.JAN.2019 13:20:02		Date: 24.JAN.2019 13:02:38	
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	
Date: 27.JAN.2019 13:47:01			

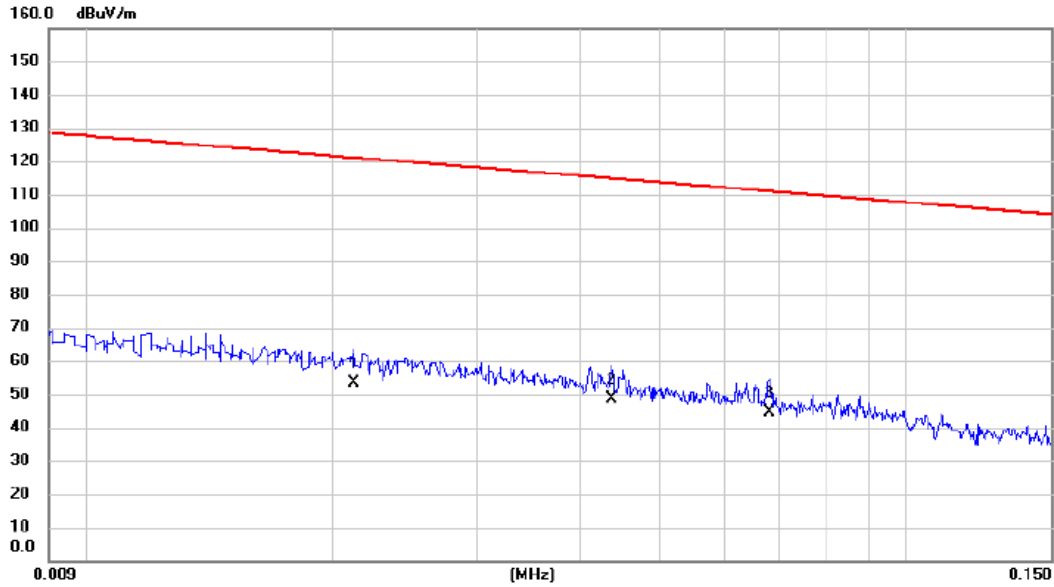
LTE Band 5_10M

Channel	Frequency(MHz)	Channel	Frequency(MHz)
20525	836.5	20525	836.5
Date: 24.JAN.2019 13:20:42		Date: 24.JAN.2019 13:03:36	
Channel	Frequency(MHz)	-	-
20525	836.5	-	-
		-	
Date: 27.JAN.2019 13:46:08			

APPENDIX D - RADIATED EMISSION (9KHZ TO 30MHZ)

Test Mode: TX Mode_Adapter AMS135-1201000FU

Ant 0°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0212	33.50	20.00	53.50	121.08	-67.58	AVG	
2	*	0.0437	29.10	19.64	48.74	114.80	-66.06	AVG	
3		0.0680	25.40	19.17	44.57	110.95	-66.38	AVG	