FCC Test Report

(PART 24)

Report No.:	RF181008C16-1
FCC ID:	NKRUMC-9628FHN
Test Model:	UMC-9628FHN
Received Date:	Oct. 08, 2018
Test Date:	Oct. 24, 2018 ~ Oct. 27, 2018
Issued Date:	Nov. 14, 2018
Applicant:	Wistron NeWeb Corporation
Address:	20 Park Ave. II, Hsinchu Science Park,Hsinchu 308, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF181008C16-1	Original Release	Nov. 14, 2018

1 Certificate of Conformity

Product:	LTE Module
Brand:	Wistron NeWeb Corp.
Test Model:	UMC-9628FHN
Sample Status:	Identical Prototype
Applicant:	Wistron NeWeb Corporation
Test Date:	Oct. 24, 2018 ~ Oct. 27, 2018
Standards:	FCC Part 24, Subpart E

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 : _____ , **Date:** Nov. 14, 2018

Gina Liu / Specialist

Approved by : _____ , **Date:** Nov. 14, 2018

Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 24 & Part 2			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 24.232	Effective Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1046 24.232(d)	Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1055 24.235	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 24.238(b)	Occupied Bandwidth	Pass	Meet the requirement of limit.
24.238(b)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 24.238	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -9.54 dB at 5550.60 MHz.

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	Expended Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	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 Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	148	Dec. 13, 2017	Dec. 12, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
MXG Vector signal generator Agilent	N5182B	MY53050162	Jan. 10, 2018	Jan. 09, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 12, 2018	Oct. 11, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Communications Tester-Wireless Agilent	8960 Series 10	MY53201073	Jun. 28, 2017	Jun. 27, 2019
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 2019
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 05, 2018	Sep. 04, 2019
DC Power Supply Topward	33010D	807748	N/A	N/A

Note:
1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is 7450F-10.

3 General Information

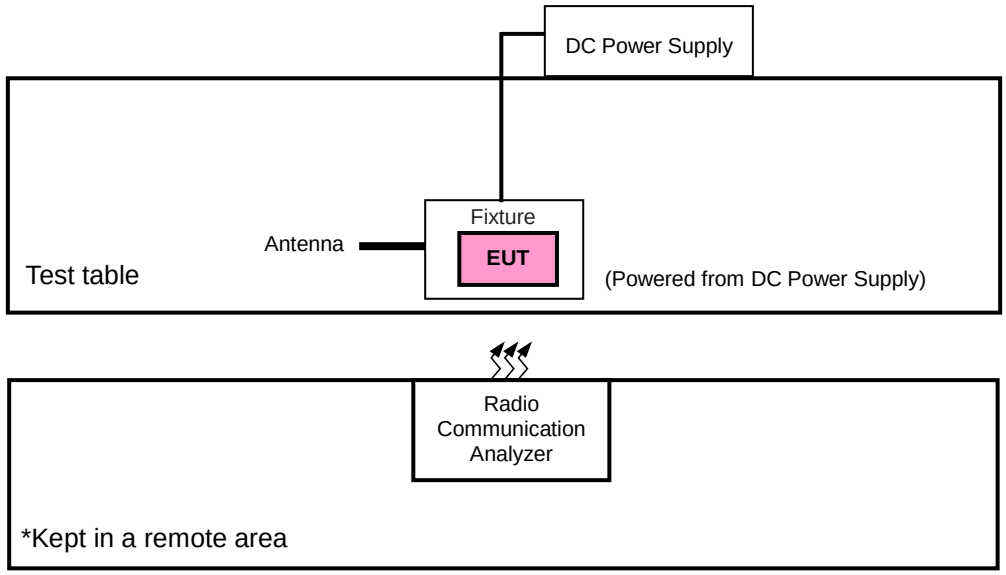
3.1 General Description of EUT

Product	LTE Module	
Brand	Wistron NeWeb Corp.	
Test Model	UMC-9628FHN	
Status of EUT	Identical Prototype	
Power Supply Rating	3.8 Vdc (DC Power Supply)	
Modulation Type	GSM/GPRS	GMSK
	EDGE	GMSK, 8PSK
	WCDMA	QPSK
	LTE	QPSK, 16QAM, 64QAM
Frequency Range	GSM/GPRS/EDGE	1850.2 ~ 1909.8 MHz
	WCDMA	1852.4 ~ 1907.6 MHz
	LTE Band 2 (Channel Bandwidth: 1.4 MHz)	1850.7 ~ 1909.3 MHz
	LTE Band 2 (Channel Bandwidth: 3 MHz)	1851.5 ~ 1908.5 MHz
	LTE Band 2 (Channel Bandwidth: 5 MHz)	1852.5 ~ 1907.5 MHz
	LTE Band 2 (Channel Bandwidth: 10 MHz)	1855.0 ~ 1905.0 MHz
	LTE Band 2 (Channel Bandwidth: 15 MHz)	1857.5 ~ 1902.5 MHz
	LTE Band 2 (Channel Bandwidth: 20 MHz)	1860.0 ~ 1900.0 MHz
Max. EIRP Power	GSM/GPRS	1883.65 mW
	EDGE	737.90 mW
	WCDMA	454.99 mW
	LTE Band 2 (Channel Bandwidth: 1.4 MHz)	283.14 mW
	LTE Band 2 (Channel Bandwidth: 3 MHz)	299.23 mW
	LTE Band 2 (Channel Bandwidth: 5 MHz)	317.69 mW
	LTE Band 2 (Channel Bandwidth: 10 MHz)	337.29 mW
	LTE Band 2 (Channel Bandwidth: 15 MHz)	355.63 mW
	LTE Band 2 (Channel Bandwidth: 20 MHz)	375.84 mW
Emission Designator	GSM/GPRS	247KGXW
	EDGE	246KG7W
	WCDMA	4M14F9W
	LTE Band 2 (Channel Bandwidth: 1.4 MHz)	1M09W7D
	LTE Band 2 (Channel Bandwidth: 3 MHz)	2M70W7D
	LTE Band 2 (Channel Bandwidth: 5 MHz)	4M49W7D
	LTE Band 2 (Channel Bandwidth: 10 MHz)	8M95G7D
	LTE Band 2 (Channel Bandwidth: 15 MHz)	13M4G7D
	LTE Band 2 (Channel Bandwidth: 20 MHz)	17M9W7D
Antenna Type	Fixed External Antenna with 3.3 dBi gain	
Accessory Device	N/A	
Data Cable Supplied	N/A	

Note:

1. 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.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Radio Communication Analyzer	Anritsu	MT8820C	6201300640	N/A
2.	Antenna	N/A	N/A	N/A	N/A
3.	DC Power Supply	Topward	33010D	807748	

No.	Signal Cable Description Of The Above Support Units
1.	N/A
2.	N/A
3.	N/A

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1 acted as communication partner to transfer data.
3. Item 2 was provided by client.

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 as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	EIRP	Radiated Emission
GSM	Z-plane	X-axis
EDGE	Z-plane	X-axis
WCDMA	Z-plane	X-axis
LTE Band 2	X-plane	Z-axis

GSM

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	512 to 810	512, 661, 810	GSM, EDGE
-	Modulation Characteristics	512 to 810	512	GSM, EDGE
-	Frequency Stability	512 to 810	512, 810	GSM, EDGE
-	Occupied Bandwidth	512 to 810	512, 661, 810	GSM, EDGE
-	Band Edge	512 to 810	512, 810	GSM, EDGE
-	Peak to Average Ratio	512 to 810	512, 661, 810	GSM, EDGE
-	Conducted Emission	512 to 810	512, 661, 810	GSM, EDGE
-	Radiated Emission	512 to 810	512, 661, 810	GSM, EDGE

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
-	Modulation Characteristics	9262 to 9538	9262	WCDMA
-	Frequency Stability	9262 to 9538	9262, 9538	WCDMA
-	Occupied Bandwidth	9262 to 9538	9262, 9400, 9538	WCDMA
-	Band Edge	9262 to 9538	9262, 9538	WCDMA
-	Peak to Average Ratio	9262 to 9538	9262, 9400, 9538	WCDMA
-	Conducted Emission	9262 to 9538	9262, 9400, 9538	WCDMA
-	Radiated Emission	9262 to 9538	9262, 9400, 9538	WCDMA

LTE Band 2

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	18607 to 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	18700 to 19100	18900	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
-	Frequency Stability	18607 to 19193	18607, 19193	1.4 MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 19185	3 MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 19175	5 MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 19150	10 MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 19125	15 MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 19100	20 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	18607 to 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3 MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20 MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
-	Peak to Average Ratio	18607 to 19193	18607, 18900, 19193	1.4 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	18607 to 19193	18607	1.4 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			19193	1.4 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		18615 to 19185	18615	3 MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			19185	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		18625 to 19175	18625	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			19175	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		18650 to 19150	18650	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			19150	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		18675 to 19125	18675	15 MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			19125	15 MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		18700 to 19100	18700	20 MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			19100	20 MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
-	Conducted Emission	18607 to 19193	18607, 18900, 19193	1.4 MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3 MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5 MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10 MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15 MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	18607 to 19193	18607, 18900, 19193	1.4 MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5 MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20 MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	26 deg. C, 58 % RH	3.8 Vdc	Thomas Wei
Modulation Characteristics	26 deg. C, 58 % RH	3.8 Vdc	Frank Chiu
Frequency Stability	26 deg. C, 58 % RH	3.8 Vdc	Frank Chiu
Occupied Bandwidth	26 deg. C, 58 % RH	3.8 Vdc	Frank Chiu
Band Edge	26 deg. C, 58 % RH	3.8 Vdc	Frank Chiu
Peak to Average Ratio	26 deg. C, 58 % RH	3.8 Vdc	Frank Chiu
Conducted Emission	26 deg. C, 58 % RH	3.8 Vdc	Frank Chiu
Radiated Emission	25 deg. C, 65 % RH	3.8 Vdc	Thomas Wei

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

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

FCC 47 CFR Part 2
FCC 47 CFR Part 24
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA/EIA-603-E 2016
ANSI 63.26-2015

NOTE: 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

Mobile / Portable station are limited to 2 watts e.i.r.p.

4.1.2 Test Procedures

EIRP / ERP Measurement:

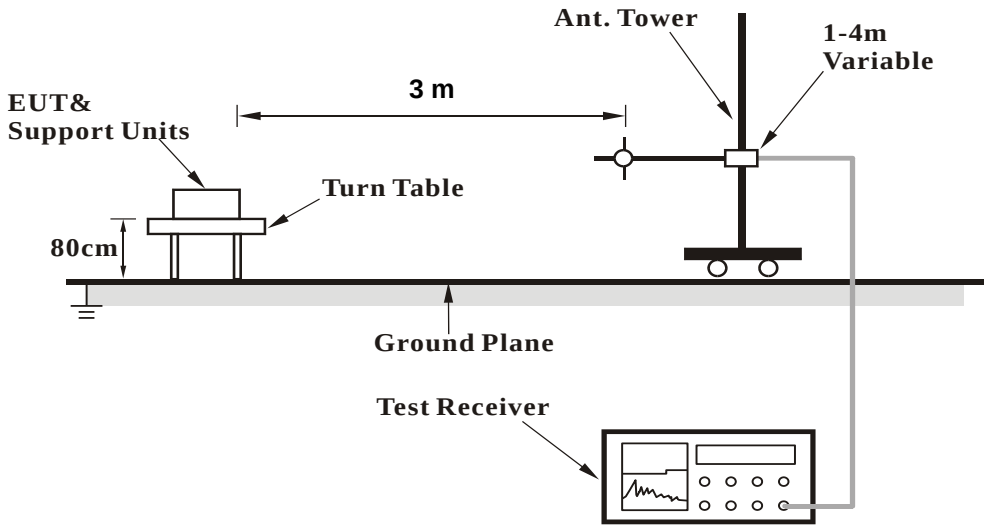
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1 MHz for GSM, GPRS & EDGE, 5 MHz for WCDMA, and 10 MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) 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.
c. 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 b. Record the power level of S.G.
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. 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 - 2.15 dB.

Conducted Power Measurement:

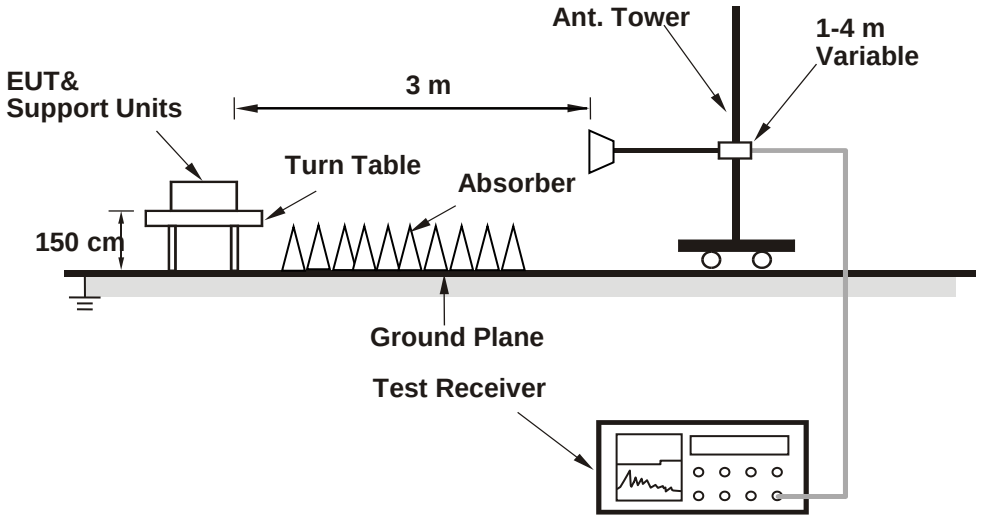
The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 Test Setup

EIRP / ERP Measurement:
<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).

Conducted Power Measurement:

4.1.4 Test Results

Conducted Output Power (dBm)

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GPRS (GMSK, 1Tx-slot)	30.45	30.36	30.75
EDGE (8PSK, 1Tx-slot)	25.82	25.69	26.09

Band	WCDMA II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	23.72	23.84	23.88
HSDPA Subtest-1	22.46	22.74	22.37
HSDPA Subtest-2	22.45	22.73	22.40
HSDPA Subtest-3	21.94	22.27	21.96
HSDPA Subtest-4	21.92	22.25	21.90
HSUPA Subtest-1	21.80	22.49	22.22
HSUPA Subtest-2	21.48	21.91	21.44
HSUPA Subtest-3	21.44	21.51	20.75
HSUPA Subtest-4	21.44	21.87	21.45
HSUPA Subtest-5	22.58	22.98	22.60

LTE Band 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		18700	18900	19100				Channel		18675	18900	19125	
		Frequency (MHz)		1860.0	1880.0	1900.0				Frequency (MHz)		1857.5	1880.0	1902.5	
20M	QPSK	1	0	23.54	23.45	24.35	0	15M	QPSK	1	0	23.51	23.37	24.30	0
		1	50	23.45	23.33	24.24	0			1	37	23.35	23.27	24.13	0
		1	99	23.17	23.23	23.97	0			1	74	23.30	23.08	24.03	0
		50	0	22.44	22.32	23.24	1			36	0	22.34	22.29	23.19	1
		50	25	22.22	22.11	23.03	1			36	19	22.15	22.09	22.97	1
		50	50	22.18	22.05	22.90	1			36	39	22.08	22.00	22.88	1
		100	0	22.45	22.31	23.21	1			75	0	22.28	22.24	23.19	1
	16QAM	1	0	22.48	22.40	23.28	1		16QAM	1	0	22.31	22.28	23.18	1
		1	50	22.33	22.22	23.19	1			1	37	22.36	22.26	23.18	1
		1	99	22.15	22.11	22.96	1			1	74	22.24	22.06	22.98	1
		50	0	21.20	21.29	22.21	2			36	0	21.23	21.22	22.09	2
		50	25	21.18	21.17	21.95	2			36	19	21.10	21.07	21.86	2
		50	50	21.07	21.00	21.95	2			36	39	21.04	20.90	21.81	2
		100	0	21.28	21.28	22.18	2			75	0	21.29	21.30	22.07	2
	64QAM	1	0	21.43	21.33	22.29	2		64QAM	1	0	21.43	21.26	22.16	2
		1	50	21.28	21.26	22.10	2			1	37	21.31	21.19	22.05	2
		1	99	20.97	20.89	21.82	2			1	74	21.15	20.94	21.90	2
		50	0	20.17	20.19	21.07	3			36	0	20.20	19.93	20.79	3
		50	25	20.18	20.00	20.97	3			36	19	20.06	19.91	20.87	3
		50	50	20.05	19.98	20.86	3			36	39	19.99	19.76	20.85	3
		100	0	20.27	20.09	21.07	3			75	0	20.33	20.19	21.06	3

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		18650	18900	19150				Channel		18625	18900	19175	
		Frequency (MHz)		1855.0	1880.0	1905.0				Frequency (MHz)		1852.5	1880.0	1907.5	
10M	QPSK	1	0	23.44	23.29	24.24	0	5M	QPSK	1	0	23.41	23.28	24.21	0
		1	24	23.34	23.25	24.08	0			1	12	23.32	23.20	24.03	0
		1	49	23.08	22.96	23.93	0			1	24	23.14	22.94	23.87	0
		25	0	22.31	22.19	23.19	1			12	0	22.24	22.15	23.09	1
		25	12	22.15	22.07	22.90	1			12	6	22.05	22.00	22.97	1
		25	25	21.99	22.00	22.92	1			12	13	21.96	21.92	22.77	1
		50	0	22.29	22.12	23.02	1			25	0	22.26	22.03	22.99	1
	16QAM	1	0	22.27	22.15	23.06	1		16QAM	1	0	21.99	21.97	22.84	1
		1	24	22.29	22.14	23.06	1			1	12	22.20	22.19	23.00	1
		1	49	22.06	21.96	22.93	1			1	24	21.99	21.87	22.87	1
		25	0	21.21	21.11	21.97	2			12	0	21.02	20.97	22.13	2
		25	12	21.09	20.88	21.92	2			12	6	21.00	20.97	21.92	2
		25	25	21.06	20.84	21.79	2			12	13	20.93	20.85	21.75	2
		50	0	21.20	21.12	22.09	2			25	0	21.22	21.13	21.98	2
	64QAM	1	0	21.37	21.23	22.13	2		64QAM	1	0	21.33	21.21	22.10	2
		1	24	21.21	21.07	21.93	2			1	12	21.12	21.18	22.02	2
		1	49	20.98	21.00	21.85	2			1	24	20.95	20.85	21.76	2
		25	0	20.19	19.89	20.95	3			12	0	20.06	19.94	20.89	3
		25	12	19.90	19.92	20.88	3			12	6	19.96	19.90	20.77	3
		25	25	19.81	19.84	20.83	3			12	13	19.84	19.79	20.71	3
		50	0	20.26	20.08	20.89	3			25	0	20.24	19.77	20.81	3

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		18615	18900	19185				Channel		18607	18900	19193	
		Frequency (MHz)		1851.5	1880.0	1908.5				Frequency (MHz)		1850.7	1880.0	1909.3	
3M	QPSK	1	0	23.39	23.19	24.12	0	1.4M	QPSK	1	0	23.26	23.17	24.12	0
		1	7	23.19	23.13	24.01	0			1	2	23.25	23.15	23.92	0
		1	14	23.01	22.99	23.91	0			1	5	22.86	23.01	23.75	0
		8	0	22.17	22.12	23.01	1			3	0	22.24	22.07	22.98	0
		8	3	22.08	21.98	22.79	1			3	1	21.94	21.89	22.71	0
		8	7	21.84	21.79	22.77	1			3	3	21.88	21.72	22.64	0
		15	0	22.22	22.05	23.08	1			6	0	22.10	21.94	22.92	1
	16QAM	1	0	22.02	21.93	22.89	1		16QAM	1	0	22.14	22.13	23.06	1
		1	7	22.19	22.13	23.01	1			1	2	22.12	22.10	22.85	1
		1	14	21.89	21.92	22.93	1			1	5	21.83	21.83	22.73	1
		8	0	21.06	21.00	21.90	2			3	0	21.01	20.99	21.90	1
		8	3	21.01	20.88	21.74	2			3	1	20.91	20.78	21.70	1
		8	7	20.95	20.87	21.68	2			3	3	20.84	20.80	21.74	1
		15	0	21.05	21.03	21.88	2			6	0	20.96	21.04	21.86	2
	64QAM	1	0	21.26	21.15	22.11	2		64QAM	1	0	21.09	21.12	21.93	2
		1	7	21.12	21.04	21.88	2			1	2	21.07	21.09	21.84	2
		1	14	20.98	20.73	21.84	2			1	5	21.03	21.00	21.83	2
		8	0	19.89	19.87	20.79	3			3	0	20.95	20.95	21.75	2
		8	3	19.97	19.90	20.67	3			3	1	20.88	20.84	21.75	2
		8	7	19.72	19.86	20.61	3			3	3	20.76	20.88	21.61	2
		15	0	19.87	19.76	20.69	3			6	0	20.02	20.02	20.77	3

EIRP Power (dBm)

GSM							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	512	1850.2	-9.59	36.57	26.98	498.88	H
	661	1880.0	-9.70	37.22	27.52	564.94	
	810	1909.8	-10.02	37.18	27.16	520.00	
	512	1850.2	-5.37	37.65	32.28	1690.44	V
	661	1880.0	-4.83	37.58	32.75	1883.65	
	810	1909.8	-4.89	37.48	32.59	1815.52	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

EDGE							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	512	1850.2	-15.72	36.57	20.85	121.62	H
	661	1880.0	-15.64	37.22	21.58	143.88	
	810	1909.8	-16.17	37.18	21.01	126.18	
	512	1850.2	-9.80	37.65	27.85	609.54	V
	661	1880.0	-8.90	37.58	28.68	737.90	
	810	1909.8	-9.33	37.48	28.15	653.13	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

WCDMA							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
Z	9262	1852.4	-16.09	36.57	20.48	111.69	H
	9400	1880.0	-16.27	37.22	20.95	124.45	
	9538	1907.6	-16.51	37.18	20.67	116.68	
	9262	1852.4	-11.56	37.65	26.09	406.44	V
	9400	1880.0	-11.00	37.58	26.58	454.99	
	9538	1907.6	-11.12	37.48	26.36	432.51	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 2							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	18607	1850.7	-12.31	36.57	24.26	266.69	H
	18900	1880.0	-12.70	37.22	24.52	283.14	
	19193	1909.3	-13.08	37.18	24.10	257.04	
	18607	1850.7	-19.03	37.65	18.62	72.78	V
	18900	1880.0	-18.56	37.58	19.02	79.80	
	19193	1909.3	-19.23	37.48	18.25	66.83	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	18607	1850.7	-13.30	36.57	23.27	212.32	H
	18900	1880.0	-13.69	37.22	23.53	225.42	
	19193	1909.3	-14.07	37.18	23.11	204.64	
	18607	1850.7	-20.02	37.65	17.63	57.94	V
	18900	1880.0	-19.55	37.58	18.03	63.53	
	19193	1909.3	-20.22	37.48	17.26	53.21	
Channel Bandwidth: 1.4 MHz / 64QAM							
X	18607	1850.7	-14.31	36.57	22.26	168.27	H
	18900	1880.0	-14.70	37.22	22.52	178.65	
	19193	1909.3	-15.08	37.18	22.10	162.18	
	18607	1850.7	-21.03	37.65	16.62	45.92	V
	18900	1880.0	-20.56	37.58	17.02	50.35	
	19193	1909.3	-21.23	37.48	16.25	42.17	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 2							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	18615	1851.5	-12.07	36.57	24.50	281.84	H
	18900	1880.0	-12.46	37.22	24.76	299.23	
	19185	1908.5	-12.84	37.18	24.34	271.64	
	18615	1851.5	-18.79	37.65	18.86	76.91	V
	18900	1880.0	-18.32	37.58	19.26	84.33	
	19185	1908.5	-18.99	37.48	18.49	70.63	
Channel Bandwidth: 3 MHz / 16QAM							
X	18615	1851.5	-13.07	36.57	23.50	223.87	H
	18900	1880.0	-13.46	37.22	23.76	237.68	
	19185	1908.5	-13.84	37.18	23.34	215.77	
	18615	1851.5	-19.79	37.65	17.86	61.09	V
	18900	1880.0	-19.32	37.58	18.26	66.99	
	19185	1908.5	-19.99	37.48	17.49	56.10	
Channel Bandwidth: 3 MHz / 64QAM							
X	18615	1851.5	-14.07	36.57	22.50	177.83	H
	18900	1880.0	-14.46	37.22	22.76	188.80	
	19185	1908.5	-14.84	37.18	22.34	171.40	
	18615	1851.5	-20.79	37.65	16.86	48.53	V
	18900	1880.0	-20.32	37.58	17.26	53.21	
	19185	1908.5	-20.99	37.48	16.49	44.57	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 2							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	18625	1852.5	-11.81	36.57	24.76	299.23	H
	18900	1880.0	-12.20	37.22	25.02	317.69	
	19175	1907.5	-12.58	37.18	24.60	288.40	
	18625	1852.5	-18.53	37.65	19.12	81.66	V
	18900	1880.0	-18.06	37.58	19.52	89.54	
	19175	1907.5	-18.73	37.48	18.75	74.99	
Channel Bandwidth: 5 MHz / 16QAM							
X	18625	1852.5	-12.83	36.57	23.74	236.59	H
	18900	1880.0	-13.22	37.22	24.00	251.19	
	19175	1907.5	-13.60	37.18	23.58	228.03	
	18625	1852.5	-19.55	37.65	18.10	64.57	V
	18900	1880.0	-19.08	37.58	18.50	70.79	
	19175	1907.5	-19.75	37.48	17.73	59.29	
Channel Bandwidth: 5 MHz / 64QAM							
X	18625	1852.5	-13.83	36.57	22.74	187.93	H
	18900	1880.0	-14.22	37.22	23.00	199.53	
	19175	1907.5	-14.60	37.18	22.58	181.13	
	18625	1852.5	-20.55	37.65	17.10	51.29	V
	18900	1880.0	-20.08	37.58	17.50	56.23	
	19175	1907.5	-20.75	37.48	16.73	47.10	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 2							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	18650	1855.0	-11.55	36.57	25.02	317.69	H
	18900	1880.0	-11.94	37.22	25.28	337.29	
	19150	1905.0	-12.32	37.18	24.86	306.20	
	18650	1855.0	-18.27	37.65	19.38	86.70	V
	18900	1880.0	-17.80	37.58	19.78	95.06	
	19150	1905.0	-18.47	37.48	19.01	79.62	
Channel Bandwidth: 10 MHz / 16QAM							
X	18650	1855.0	-12.60	36.57	23.97	249.46	H
	18900	1880.0	-12.99	37.22	24.23	264.85	
	19150	1905.0	-13.37	37.18	23.81	240.44	
	18650	1855.0	-19.32	37.65	18.33	68.08	V
	18900	1880.0	-18.85	37.58	18.73	74.64	
	19150	1905.0	-19.52	37.48	17.96	62.52	
Channel Bandwidth: 10 MHz / 64QAM							
X	18650	1855.0	-13.58	36.57	22.99	199.07	H
	18900	1880.0	-13.97	37.22	23.25	211.35	
	19150	1905.0	-14.35	37.18	22.83	191.87	
	18650	1855.0	-20.30	37.65	17.35	54.33	V
	18900	1880.0	-19.83	37.58	17.75	59.57	
	19150	1905.0	-20.50	37.48	16.98	49.89	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 2							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	18675	1857.5	-11.32	36.57	25.25	334.97	H
	18900	1880.0	-11.71	37.22	25.51	355.63	
	19125	1902.5	-12.09	37.18	25.09	322.85	
	18675	1857.5	-18.04	37.65	19.61	91.41	V
	18900	1880.0	-17.57	37.58	20.01	100.23	
	19125	1902.5	-18.24	37.48	19.24	83.95	
Channel Bandwidth: 15 MHz / 16QAM							
X	18675	1857.5	-12.34	36.57	24.23	264.85	H
	18900	1880.0	-12.73	37.22	24.49	281.19	
	19125	1902.5	-13.11	37.18	24.07	255.27	
	18675	1857.5	-19.06	37.65	18.59	72.28	V
	18900	1880.0	-18.59	37.58	18.99	79.25	
	19125	1902.5	-19.26	37.48	18.22	66.37	
Channel Bandwidth: 15 MHz / 64QAM							
X	18675	1857.5	-13.34	36.57	23.23	210.38	H
	18900	1880.0	-13.73	37.22	23.49	223.36	
	19125	1902.5	-14.11	37.18	23.07	202.77	
	18675	1857.5	-20.06	37.65	17.59	57.41	V
	18900	1880.0	-19.59	37.58	17.99	62.95	
	19125	1902.5	-20.26	37.48	17.22	52.72	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 2							
Channel Bandwidth: 20 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	18700	1860.0	-11.08	36.57	25.49	354.00	H
	18900	1880.0	-11.47	37.22	25.75	375.84	
	19100	1900.0	-11.85	37.18	25.33	341.19	
	18700	1860.0	-17.80	37.65	19.85	96.61	V
	18900	1880.0	-17.33	37.58	20.25	105.93	
	19100	1900.0	-18.00	37.48	19.48	88.72	
Channel Bandwidth: 20 MHz / 16QAM							
X	18700	1860.0	-12.10	36.57	24.47	279.90	H
	18900	1880.0	-12.49	37.22	24.73	297.17	
	19100	1900.0	-12.87	37.18	24.31	269.77	
	18700	1860.0	-18.82	37.65	18.83	76.38	V
	18900	1880.0	-18.35	37.58	19.23	83.75	
	19100	1900.0	-19.02	37.48	18.46	70.15	
Channel Bandwidth: 20 MHz / 64QAM							
X	18700	1860.0	-13.11	36.57	23.46	221.82	H
	18900	1880.0	-13.50	37.22	23.72	235.50	
	19100	1900.0	-13.88	37.18	23.30	213.80	
	18700	1860.0	-19.83	37.65	17.82	60.53	V
	18900	1880.0	-19.36	37.58	18.22	66.37	
	19100	1900.0	-20.03	37.48	17.45	55.59	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

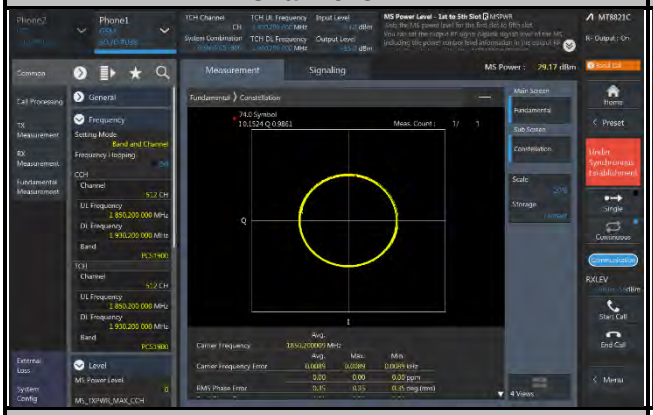
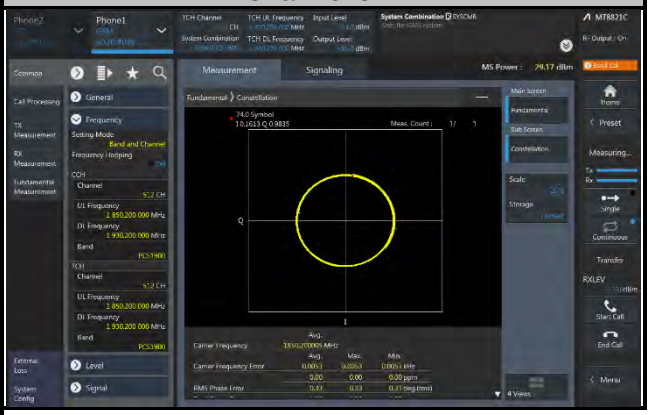
N/A

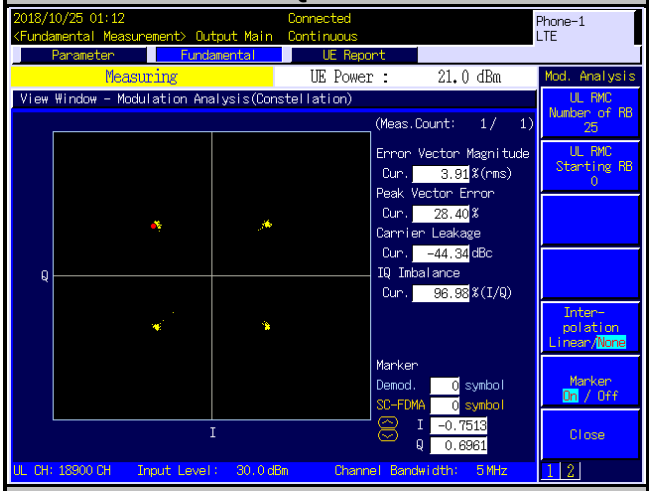
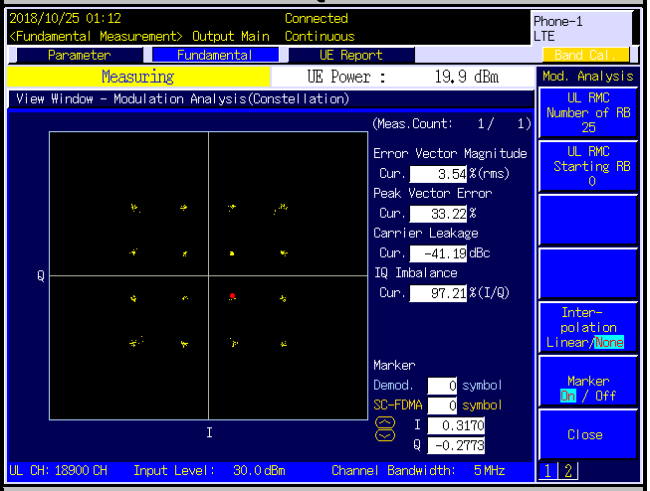
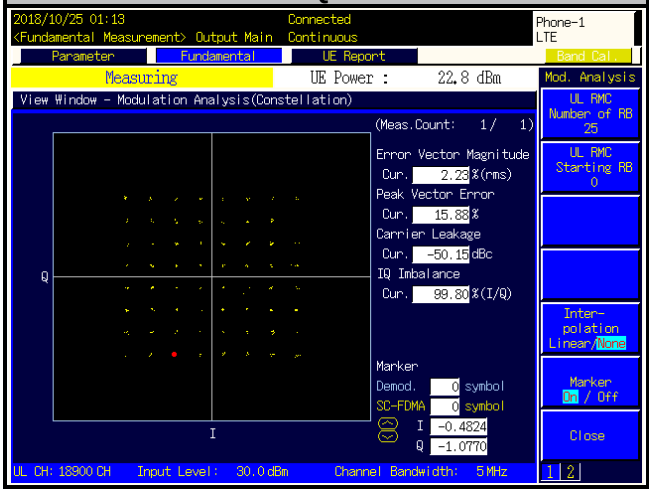
4.2.2 Test Setup

4.2.3 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.

4.2.4 Test Results

Spectrum Plot of Measurement	
GSM	**EDGE**
Channel 512	**Channel 512**
	
WCDMA	
Channel 9262	
	

Spectrum Plot of Measurement	
LTE Band 2	
Channel 18900	
QPSK	16QAM
	
64QAM	
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

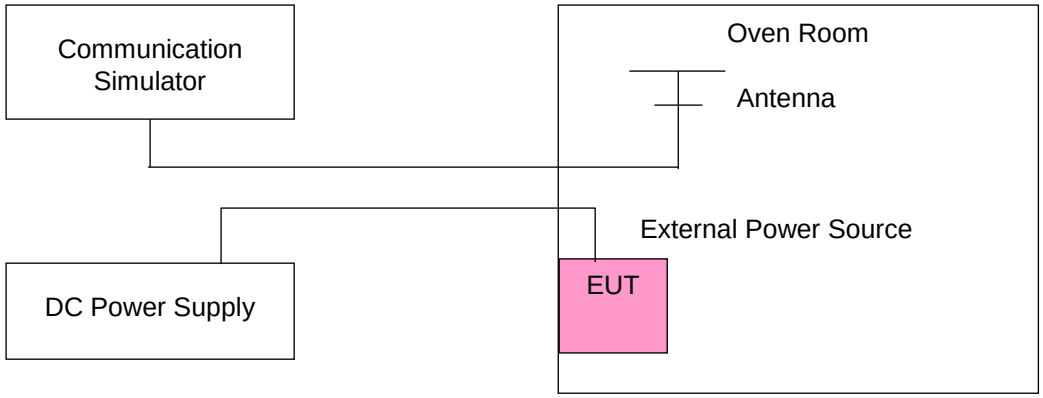
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1850.200003	0.002	1909.800004	0.002	2.5
3.23	1850.200001	0.001	1909.800002	0.001	2.5
4.37	1850.200004	0.002	1909.800002	0.001	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1850.200004	0.002	1909.800004	0.002	2.5
-20	1850.200002	0.001	1909.800003	0.002	2.5
-10	1850.200003	0.002	1909.800003	0.002	2.5
0	1850.200001	0.001	1909.800003	0.002	2.5
10	1850.200002	0.001	1909.800001	0.001	2.5
20	1850.200001	0.001	1909.800002	0.001	2.5
30	1850.199996	-0.002	1909.799996	-0.002	2.5
40	1850.199996	-0.002	1909.799998	-0.001	2.5
50	1850.199996	-0.002	1909.799997	-0.002	2.5
60	1850.199998	-0.001	1909.799997	-0.002	2.5
70	1850.199998	-0.001	1909.799999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	EDGE				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1850.200001	0.001	1909.800002	0.001	2.5
3.23	1850.200003	0.002	1909.800004	0.002	2.5
4.37	1850.200004	0.002	1909.800002	0.001	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	EDGE				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1850.200002	0.001	1909.800002	0.001	2.5
-20	1850.200004	0.002	1909.800004	0.002	2.5
-10	1850.200001	0.001	1909.800004	0.002	2.5
0	1850.200003	0.002	1909.800002	0.001	2.5
10	1850.200002	0.001	1909.800001	0.001	2.5
20	1850.200002	0.001	1909.800002	0.001	2.5
30	1850.199996	-0.002	1909.799997	-0.001	2.5
40	1850.199999	-0.001	1909.799997	-0.002	2.5
50	1850.199997	-0.002	1909.799998	-0.001	2.5
60	1850.199996	-0.002	1909.799997	-0.002	2.5
70	1850.199997	-0.002	1909.799998	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1852.400002	0.001	1907.600002	0.001	2.5
3.23	1852.400001	0.001	1907.600001	0.001	2.5
4.37	1852.400002	0.001	1907.600002	0.001	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1852.400003	0.002	1907.600003	0.001	2.5
-20	1852.400002	0.001	1907.600002	0.001	2.5
-10	1852.400004	0.002	1907.600003	0.001	2.5
0	1852.400002	0.001	1907.600004	0.002	2.5
10	1852.400004	0.002	1907.600001	0.001	2.5
20	1852.400003	0.001	1907.600004	0.002	2.5
30	1852.399999	-0.001	1907.599999	-0.001	2.5
40	1852.399998	-0.001	1907.599997	-0.002	2.5
50	1852.399997	-0.002	1907.599997	-0.002	2.5
60	1852.399998	-0.001	1907.599999	-0.001	2.5
70	1852.399998	-0.001	1907.599998	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1850.700002	0.001	1909.300000	0.002	2.5
3.23	1850.700004	0.002	1909.300004	0.002	2.5
4.37	1850.700002	0.001	1909.300004	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1850.700002	0.001	1909.300002	0.001	2.5
-20	1850.700001	0.001	1909.300002	0.001	2.5
-10	1850.700003	0.002	1909.300004	0.002	2.5
0	1850.700002	0.001	1909.300004	0.002	2.5
10	1850.700003	0.002	1909.300003	0.002	2.5
20	1850.700004	0.002	1909.300002	0.001	2.5
30	1850.699998	-0.001	1909.299996	-0.002	2.5
40	1850.699997	-0.002	1909.299996	-0.002	2.5
50	1850.699996	-0.002	1909.299999	-0.001	2.5
60	1850.699998	-0.001	1909.299998	-0.001	2.5
70	1850.699999	-0.001	1909.299999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1851.500004	0.002	1907.500002	0.001	2.5
3.23	1851.500002	0.001	1907.500004	0.002	2.5
4.37	1851.500001	0.001	1907.500001	0.001	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1851.500004	0.002	1907.500004	0.002	2.5
-20	1851.500004	0.002	1907.500003	0.002	2.5
-10	1851.500002	0.001	1907.500002	0.001	2.5
0	1851.500004	0.002	1907.500003	0.002	2.5
10	1851.500001	0.001	1907.500003	0.002	2.5
20	1851.500002	0.001	1907.500002	0.001	2.5
30	1851.499999	-0.001	1907.499997	-0.002	2.5
40	1851.499998	-0.001	1907.499998	-0.001	2.5
50	1851.499999	-0.001	1907.499998	-0.001	2.5
60	1851.499996	-0.002	1907.499997	-0.002	2.5
70	1851.499998	-0.001	1907.499996	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1852.500002	0.001	1907.500002	0.001	2.5
3.23	1852.500002	0.001	1907.500004	0.002	2.5
4.37	1852.500003	0.001	1907.500002	0.001	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1852.500002	0.001	1907.500003	0.002	2.5
-20	1852.500001	0.001	1907.500001	0.001	2.5
-10	1852.500002	0.001	1907.500003	0.002	2.5
0	1852.500002	0.001	1907.500003	0.002	2.5
10	1852.500002	0.001	1907.500003	0.002	2.5
20	1852.500002	0.001	1907.500003	0.001	2.5
30	1852.499998	-0.001	1907.499997	-0.002	2.5
40	1852.499997	-0.002	1907.499998	-0.001	2.5
50	1852.499996	-0.002	1907.499997	-0.002	2.5
60	1852.499999	-0.001	1907.499996	-0.002	2.5
70	1852.499998	-0.001	1907.499997	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1855.000002	0.001	1905.000004	0.002	2.5
3.23	1855.000002	0.001	1905.000003	0.002	2.5
4.37	1855.000004	0.002	1905.000003	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1855.000002	0.001	1905.000002	0.001	2.5
-20	1855.000001	0.001	1905.000003	0.002	2.5
-10	1855.000001	0.001	1905.000004	0.002	2.5
0	1855.000002	0.001	1905.000002	0.001	2.5
10	1855.000004	0.002	1905.000003	0.002	2.5
20	1855.000004	0.002	1905.000003	0.001	2.5
30	1854.999996	-0.002	1904.999999	-0.001	2.5
40	1854.999996	-0.002	1904.999997	-0.002	2.5
50	1854.999997	-0.002	1904.999998	-0.001	2.5
60	1854.999999	-0.001	1904.999997	-0.001	2.5
70	1854.999997	-0.002	1904.999996	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1857.500004	0.002	1902.500002	0.001	2.5
3.23	1857.500002	0.001	1902.500003	0.002	2.5
4.37	1857.500003	0.002	1902.500003	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1857.500003	0.002	1902.500003	0.001	2.5
-20	1857.500004	0.002	1902.500002	0.001	2.5
-10	1857.500001	0.001	1902.500003	0.001	2.5
0	1857.500001	0.001	1902.500003	0.002	2.5
10	1857.500002	0.001	1902.500002	0.001	2.5
20	1857.500003	0.001	1902.500003	0.001	2.5
30	1857.499996	-0.002	1902.499998	-0.001	2.5
40	1857.499999	-0.001	1902.499998	-0.001	2.5
50	1857.499999	-0.001	1902.499996	-0.002	2.5
60	1857.499996	-0.002	1902.499999	-0.001	2.5
70	1857.499998	-0.001	1902.499999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	1860.000003	0.002	1900.000002	0.001	2.5
3.23	1860.000002	0.001	1900.000002	0.001	2.5
4.37	1860.000001	0.001	1900.000003	0.002	2.5

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

Frequency Error vs. Temperature

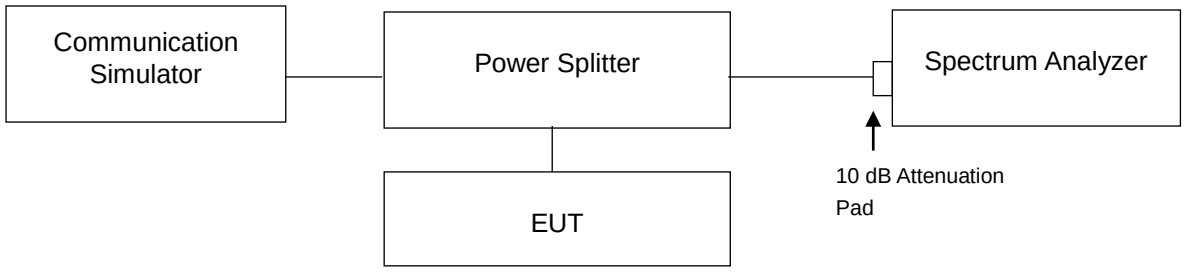
Temp. (℃)	LTE Band 2				Limit (ppm)
	Channel Bandwidth: 20 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1860.000002	0.001	1900.000002	0.001	2.5
-20	1860.000003	0.002	1900.000002	0.001	2.5
-10	1860.000002	0.001	1900.000001	0.001	2.5
0	1860.000001	0.001	1900.000002	0.001	2.5
10	1860.000001	0.001	1900.000002	0.001	2.5
20	1860.000001	0.001	1900.000004	0.002	2.5
30	1859.999998	-0.001	1899.999998	-0.001	2.5
40	1859.999998	-0.001	1899.999996	-0.002	2.5
50	1859.999997	-0.002	1899.999997	-0.002	2.5
60	1859.999998	-0.001	1899.999996	-0.002	2.5
70	1859.999999	-0.001	1899.999997	-0.001	2.5

4.4 Occupied Bandwidth Measurement

4.4.1 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.

4.4.2 Test Setup

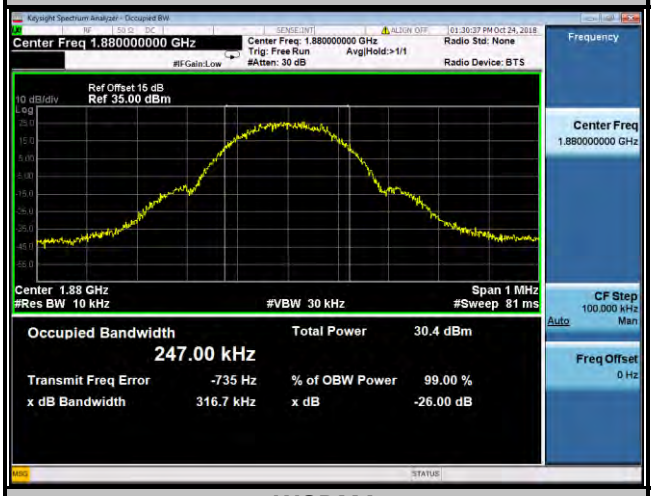


4.4.3 Test Result

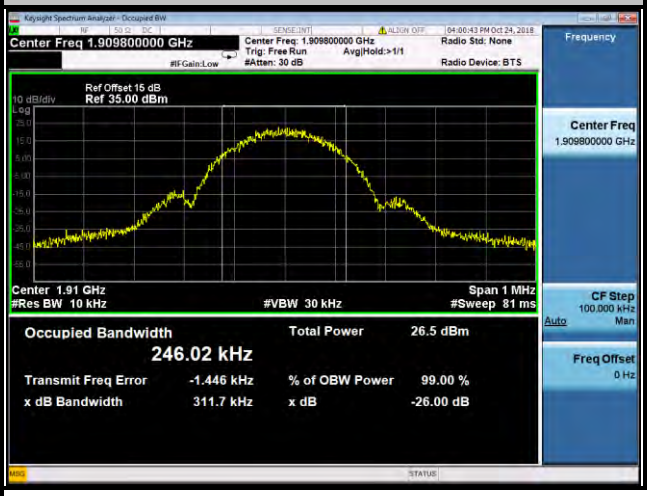
Channel	Frequency (MHz)	99 % Occupied Bandwidth (kHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)
		GSM	EDGE			WCDMA
512	1850.2	244.85	245.25	9262	1852.4	4.1435
661	1880.0	247.00	245.19	9400	1880.0	4.1430
810	1909.8	243.62	246.02	9538	1907.6	4.1386

Spectrum Plot of Worst Value

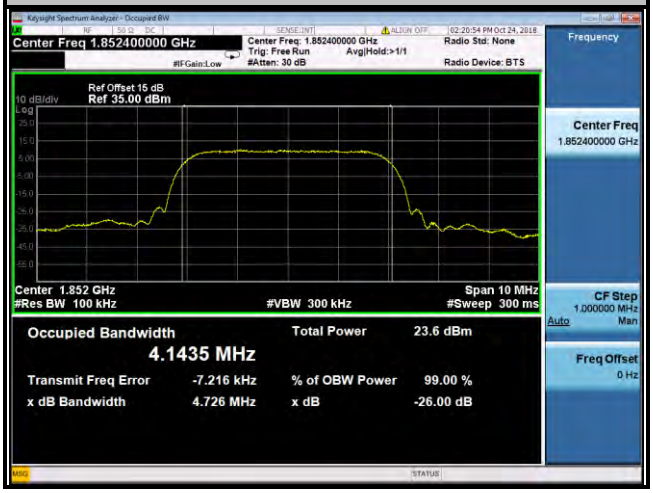
GSM



EDGE

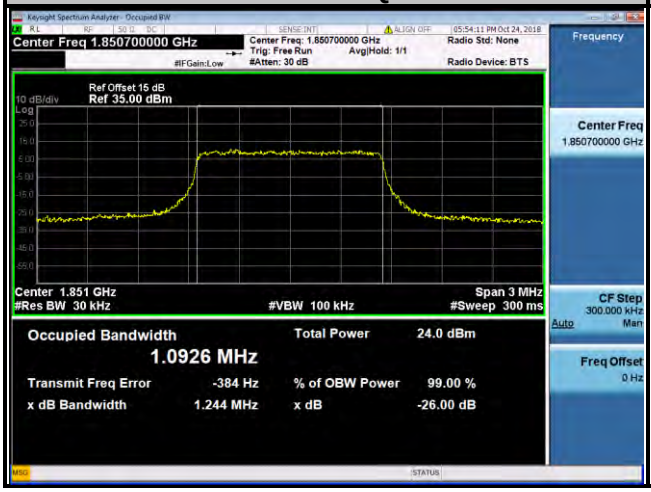


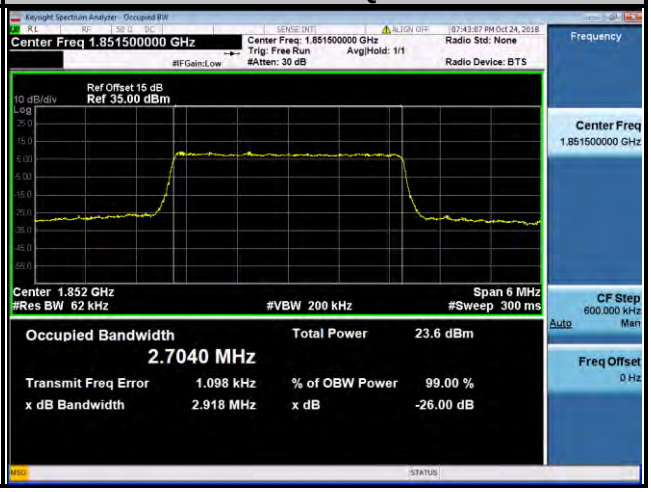
WCDMA



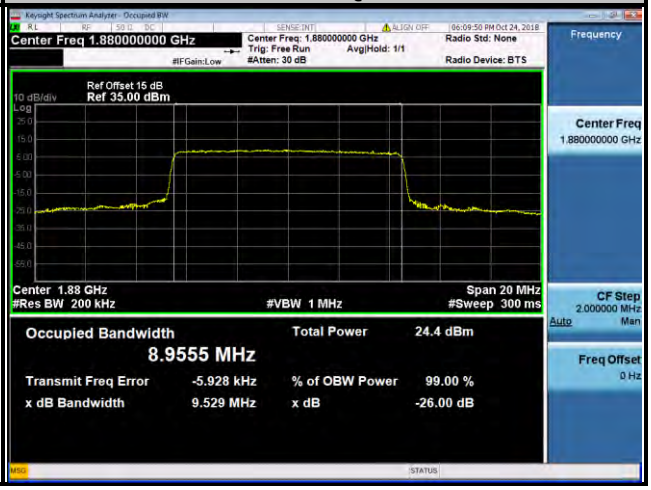
LTE Band 2									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18607	1850.7	1.0883	1.0926	1.0878	18615	1851.5	2.7027	2.6983	2.7040
18900	1880.0	1.0866	1.0896	1.0880	18900	1880.0	2.7039	2.6980	2.7033
19193	1909.3	1.0884	1.0908	1.0885	19185	1908.5	2.7006	2.7002	2.7036

Spectrum Plot of Worst Value	
1.4 MHz / 16QAM	3 MHz / 64QAM

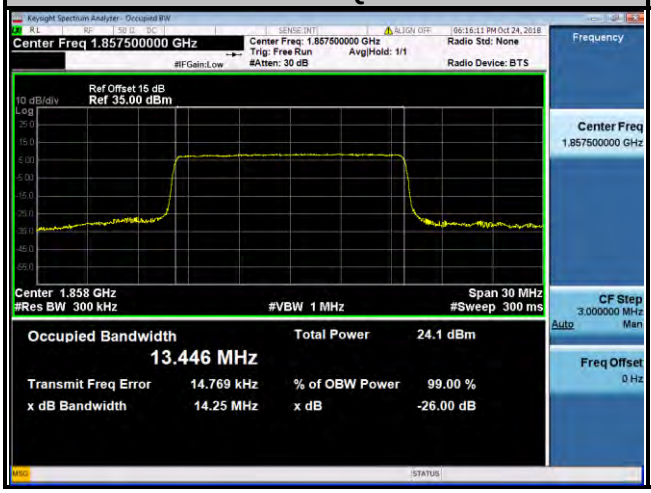
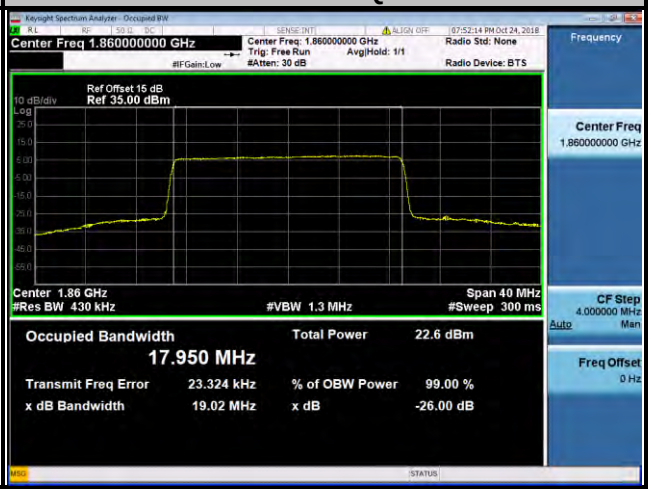




LTE Band 2									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18625	1852.5	4.4927	4.4925	4.4930	18650	1855.0	8.9538	8.9526	8.9515
18900	1880.0	4.4915	4.4956	4.4951	18900	1880.0	8.9555	8.9488	8.9491
19175	1907.5	4.4881	4.4928	4.4929	19150	1905.0	8.9441	8.9491	8.9443

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

LTE Band 2									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18675	1857.5	13.446	13.433	13.436	18700	1860.0	17.930	17.945	17.950
18900	1880.0	13.430	13.414	13.408	18900	1880.0	17.857	17.885	17.886
19125	1902.5	13.401	13.394	13.388	19100	1900.0	17.830	17.857	17.849

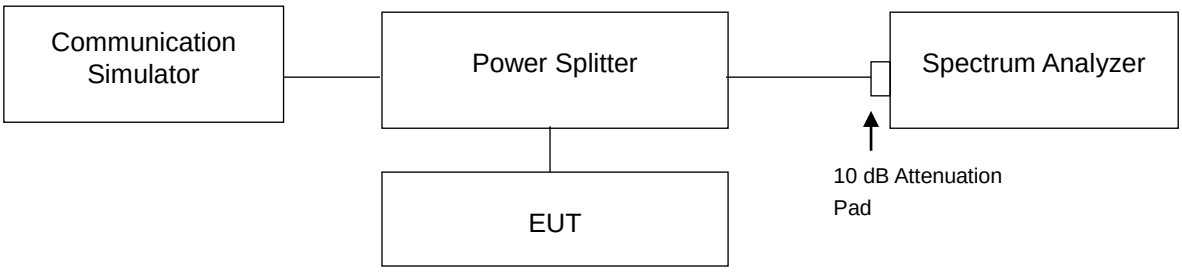
Spectrum Plot of Worst Value	
15 MHz / QPSK	20 MHz / 64QAM
	

4.5 Band Edge Measurement

4.5.1 Limits of Band Edge Measurement

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.

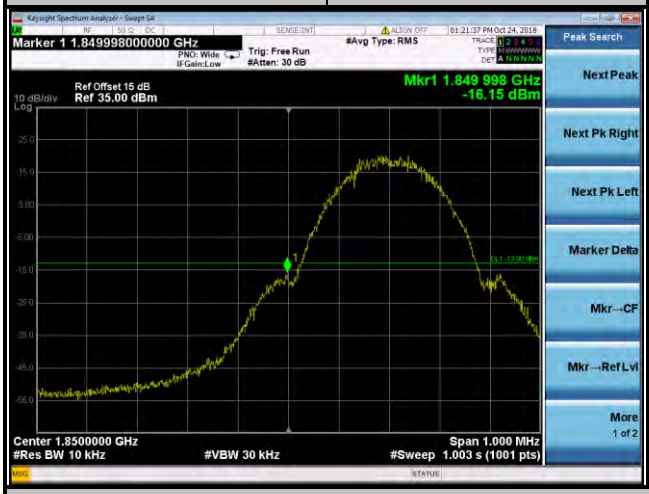
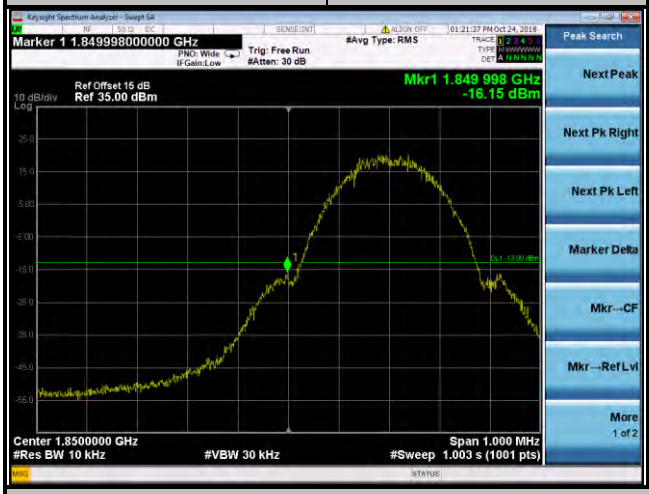
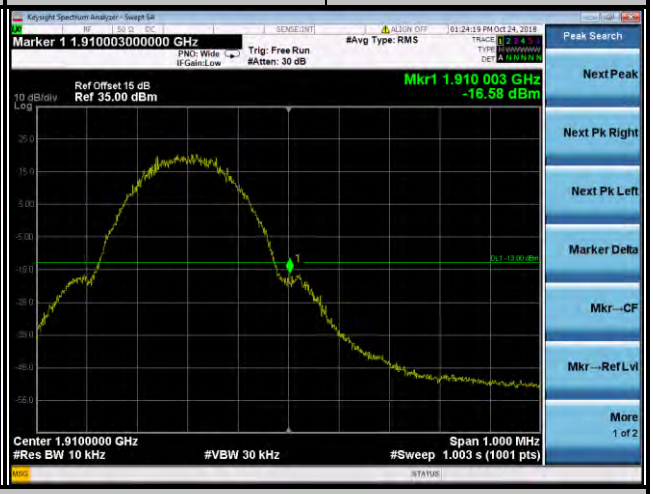
4.5.2 Test Setup

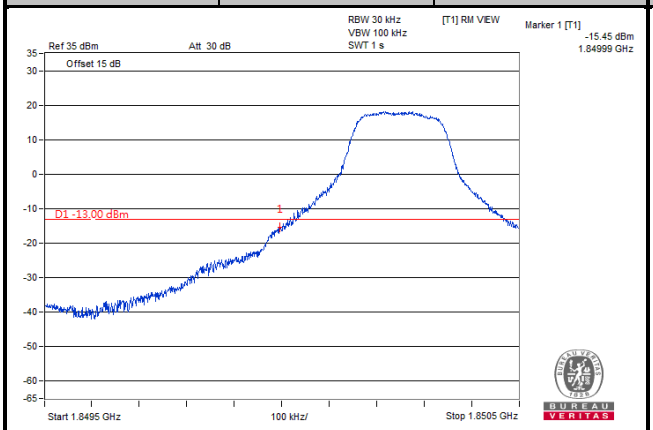
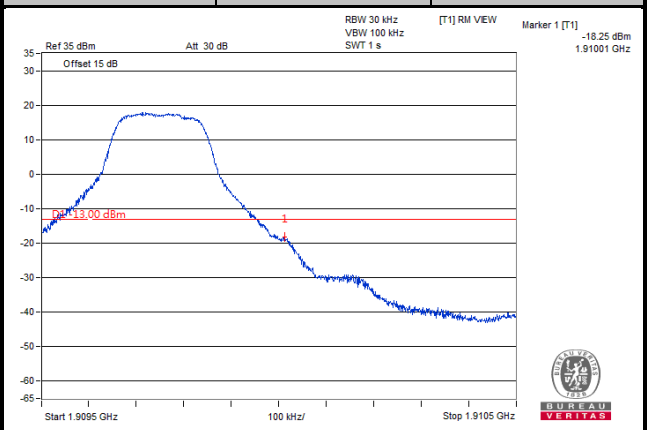
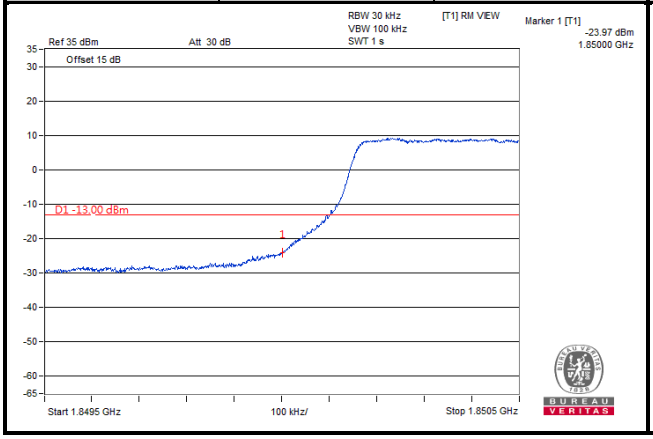
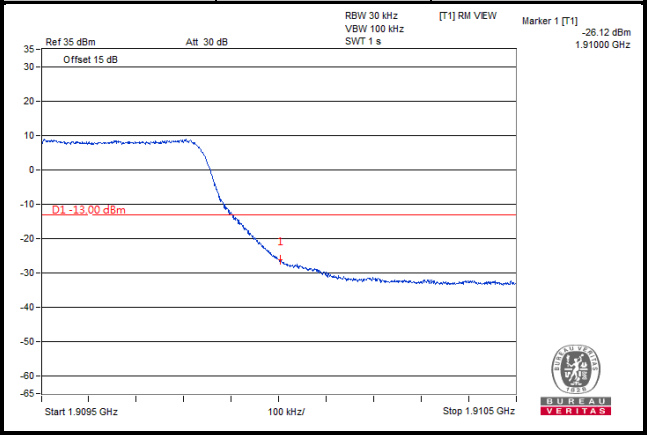


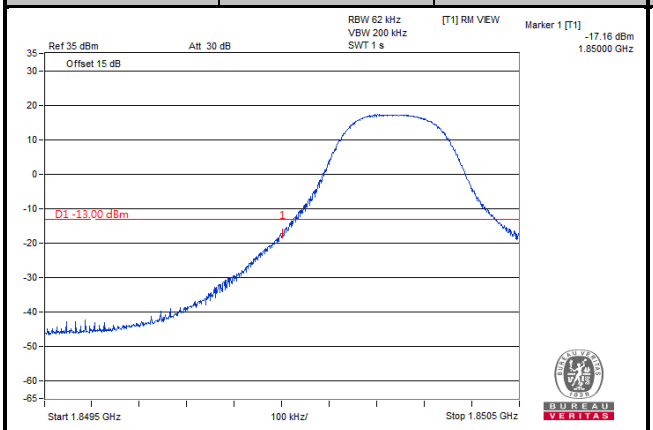
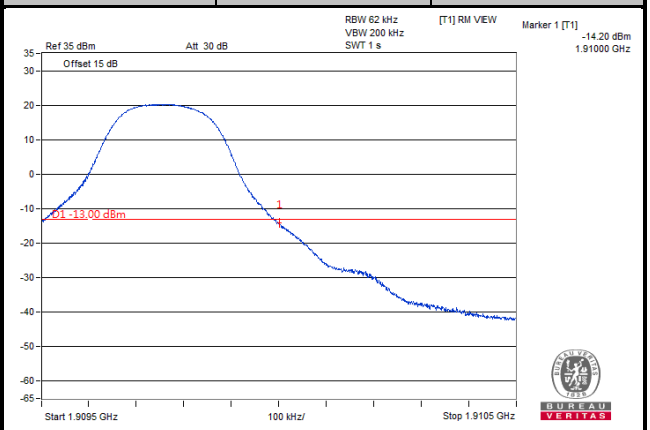
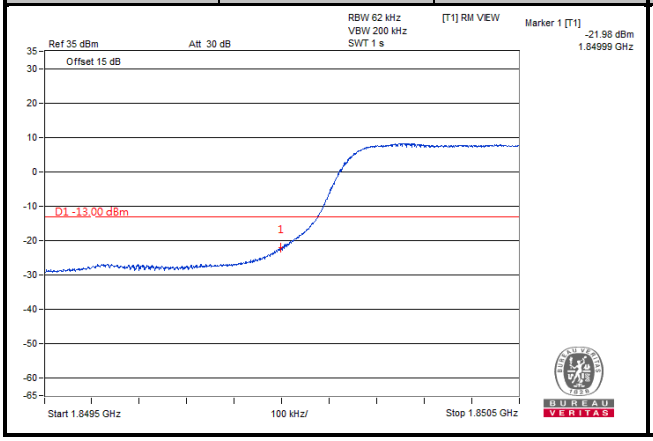
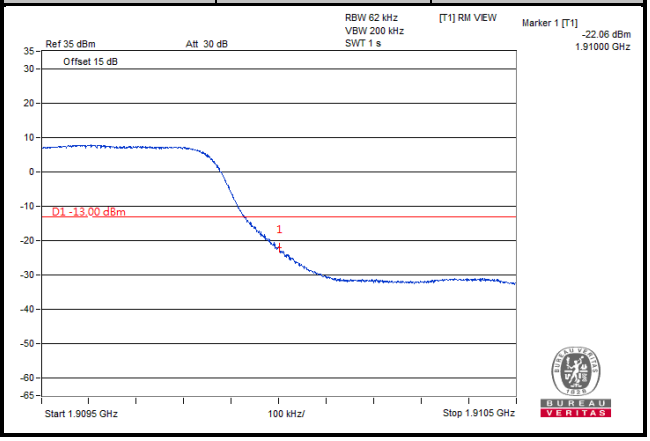
4.5.3 Test Procedures

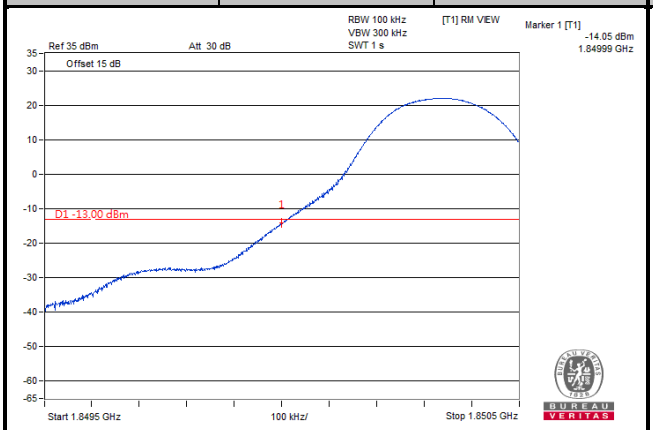
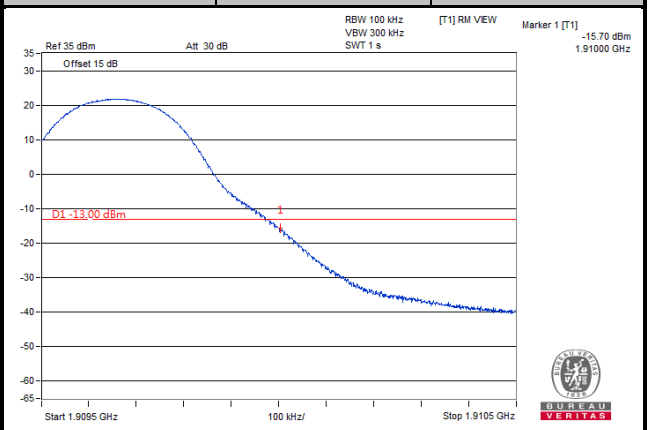
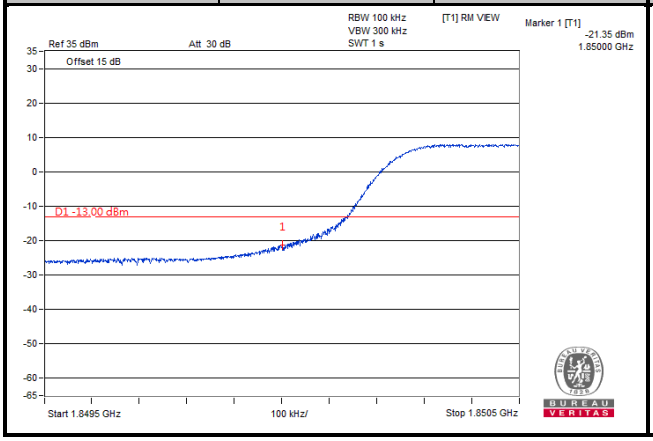
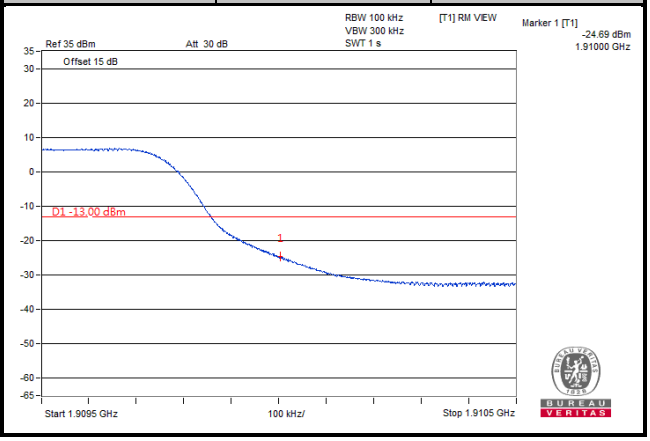
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 10 kHz and VB of the spectrum is 30 kHz (GSM/GPRS/EDGE).
c. The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (WCDMA).
d. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 1.4 MHz).
e. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 62 kHz and VB of the spectrum is 200 kHz (LTE Bandwidth 3 MHz).
f. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 5 MHz).
g. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 200 kHz and VB of the spectrum is 1 MHz (LTE Bandwidth 10 MHz).
h. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 300 kHz and VB of the spectrum is 1 MHz (LTE Bandwidth 15 MHz).
i. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 430 kHz and VB of the spectrum is 1.3 MHz (LTE Bandwidth 20 MHz).
j. Record the max trace plot into the test report.

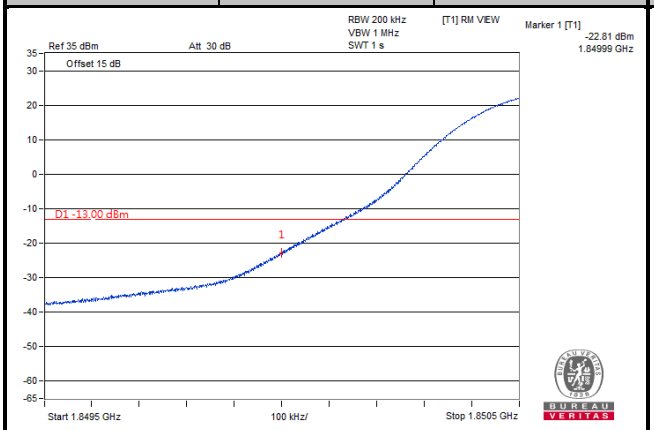
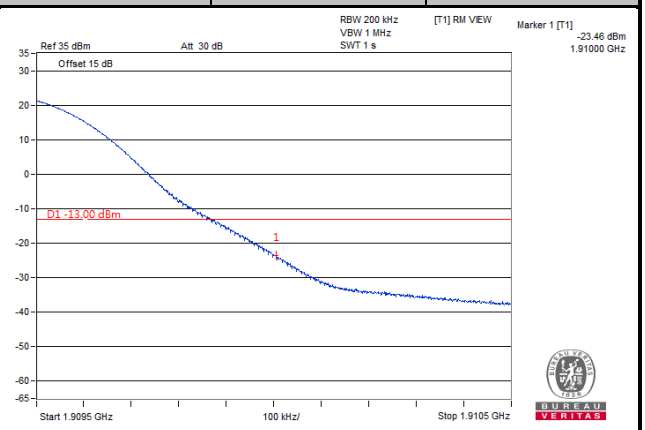
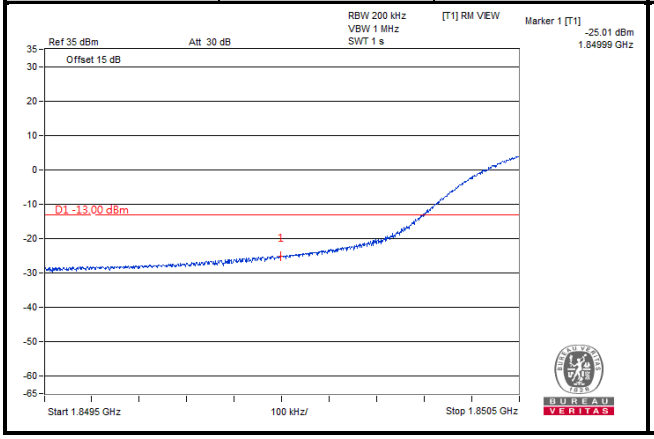
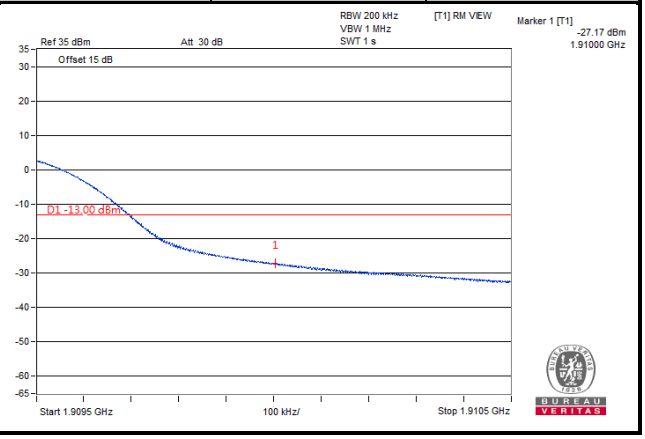
4.5.4 Test Results

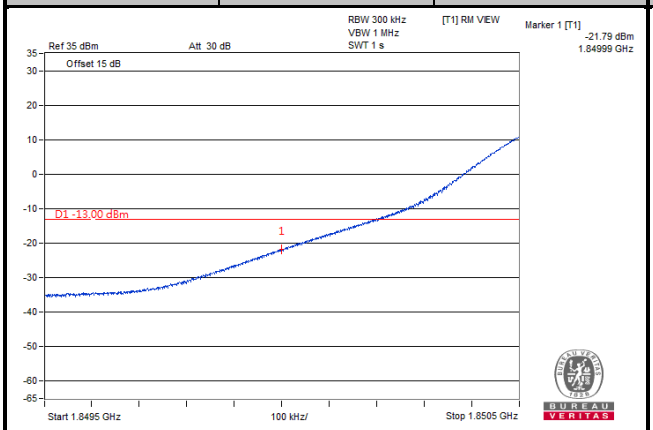
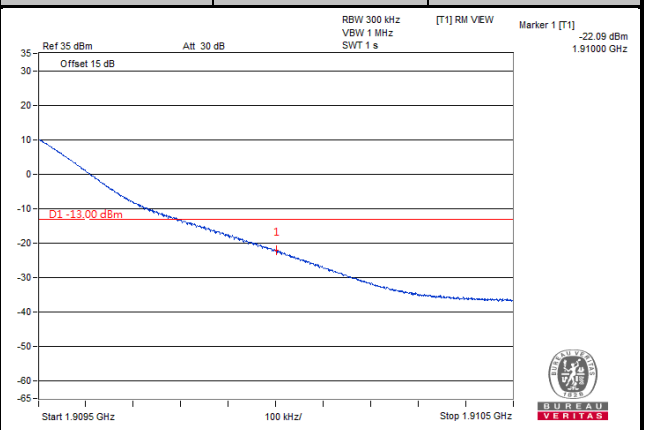
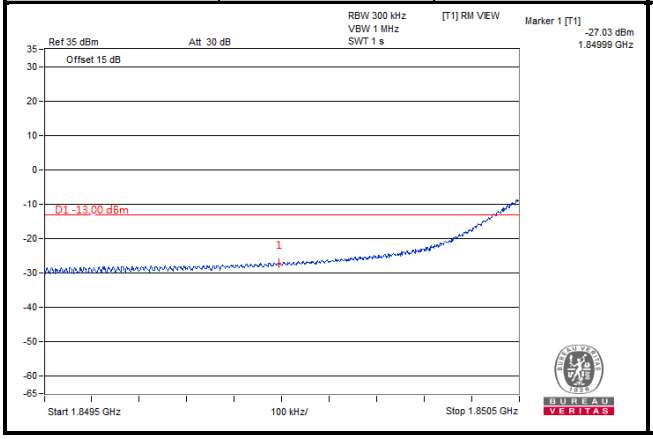
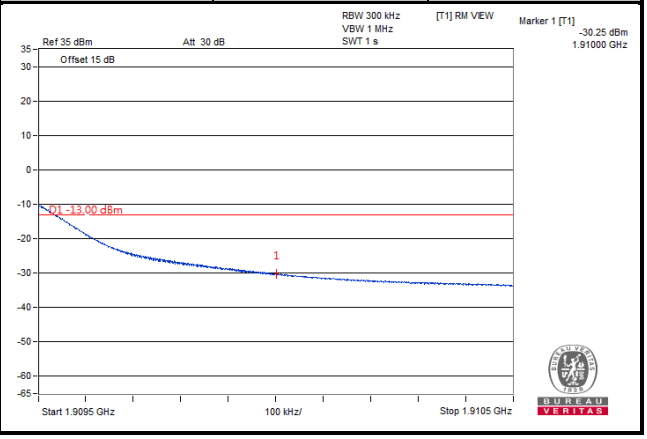
GSM			
Channel	512	Channel	810
			
EDGE			
Channel	512	Channel	810
			
WCDMA			
Channel	9262	Channel	9538
			

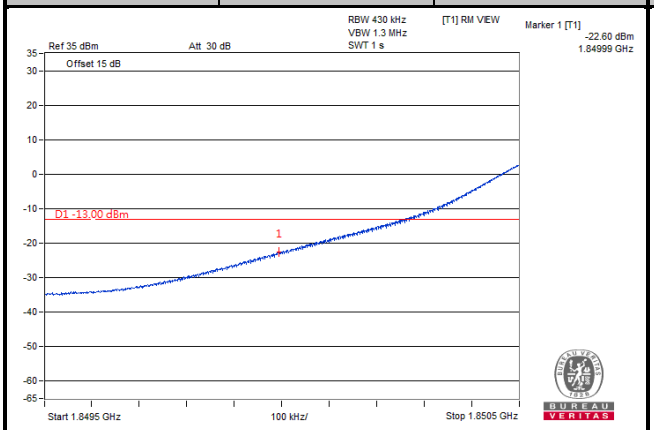
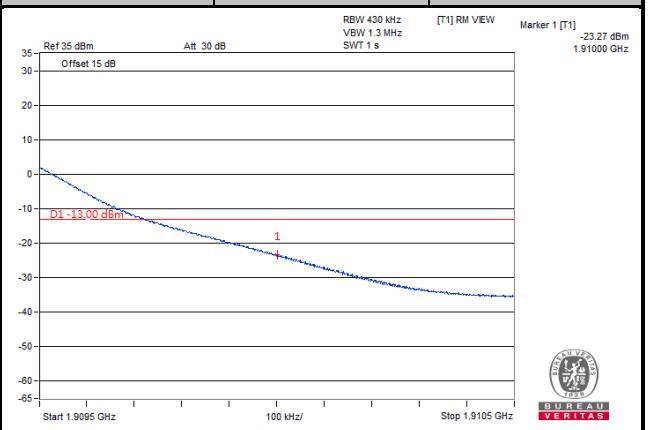
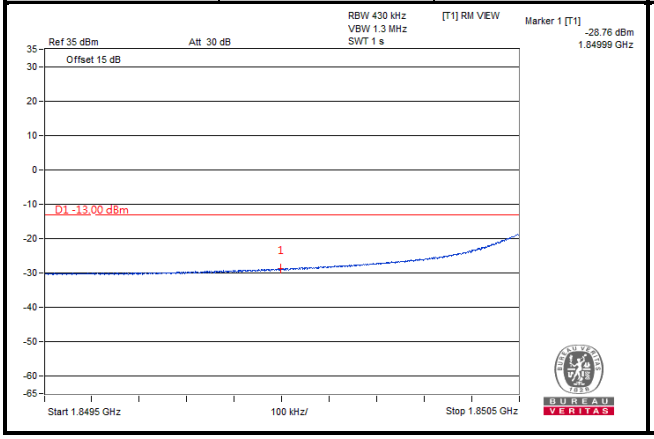
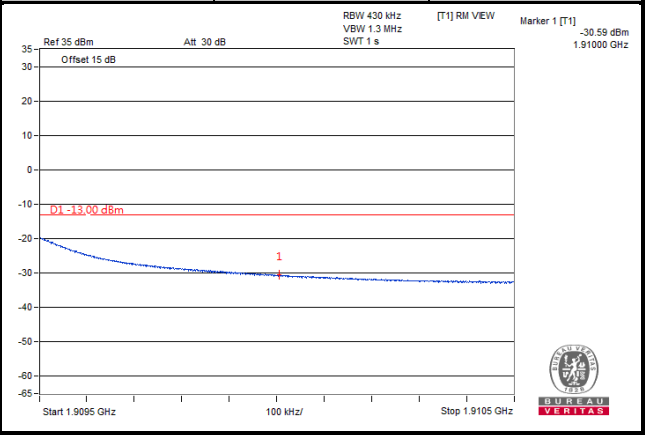
LTE Band 2					
Channel Bandwidth: 1.4 MHz					
Channel	18607	1 RB	Channel	19193	1 RB
					
Channel	18607	6 RB	Channel	19193	6 RB
					

LTE Band 2					
Channel Bandwidth: 3 MHz					
Channel	18615	1 RB	Channel	19185	1 RB
					
Channel	18615	15 RB	Channel	19185	15 RB
					

LTE Band 2					
Channel Bandwidth: 5 MHz					
Channel	18625	1 RB	Channel	19175	1 RB
					
Channel	18625	25 RB	Channel	19175	25 RB
					

LTE Band 2					
Channel Bandwidth: 10 MHz					
Channel	18650	1 RB	Channel	19150	1 RB
					
Channel	18650	50 RB	Channel	19150	50 RB
					

LTE Band 2					
Channel Bandwidth: 15 MHz					
Channel	18675	1 RB	Channel	19125	1 RB
					
Channel	18675	75 RB	Channel	19125	75 RB
					

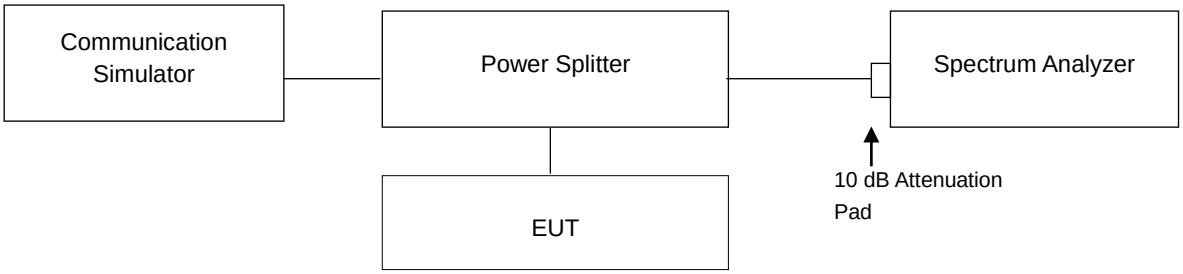
LTE Band 2					
Channel Bandwidth: 20 MHz					
Channel	18700	1 RB	Channel	19100	1 RB
					
Channel	18700	100 RB	Channel	19100	100 RB
					

4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

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 Setup



4.6.3 Test Procedures

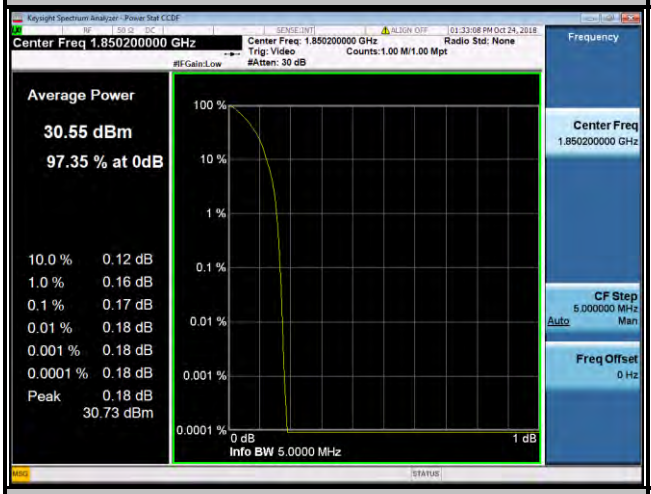
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

4.6.4 Test Results

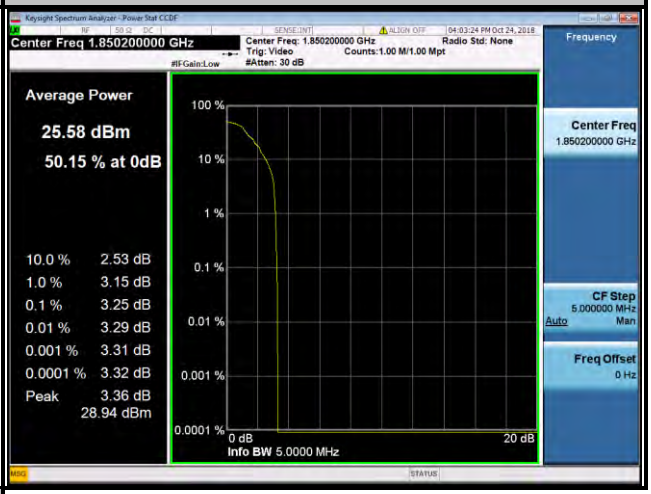
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)
		GSM	EDGE			WCDMA
512	1850.2	0.17	3.25	9262	1852.4	3.08
661	1880.0	0.15	3.21	9400	1880.0	2.85
810	1909.8	0.17	3.17	9538	1907.6	3.08

Spectrum Plot of Worst Value

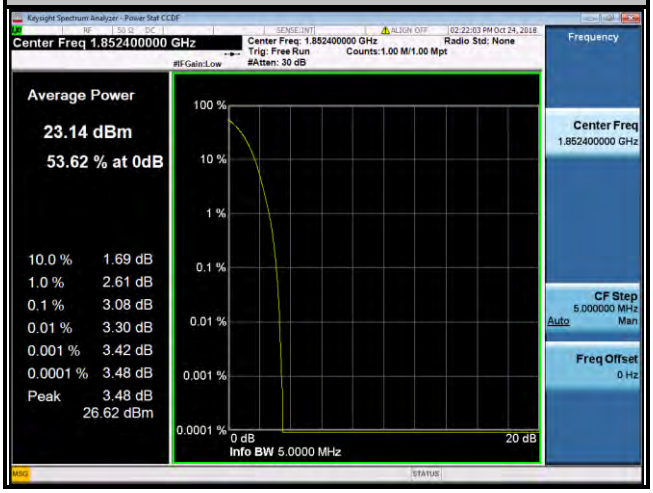
GSM



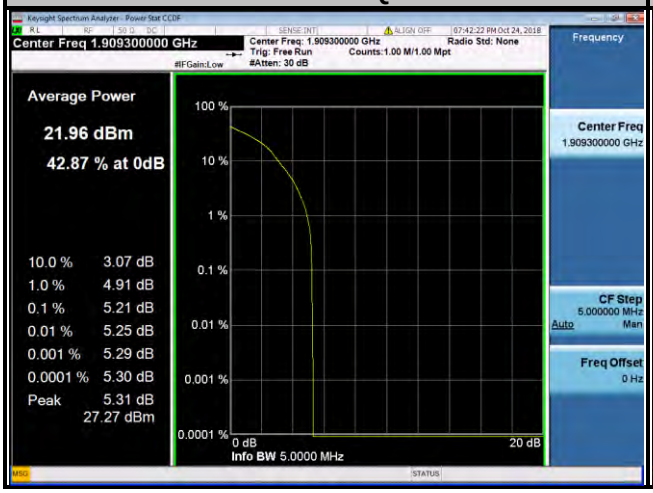
EDGE



WCDMA

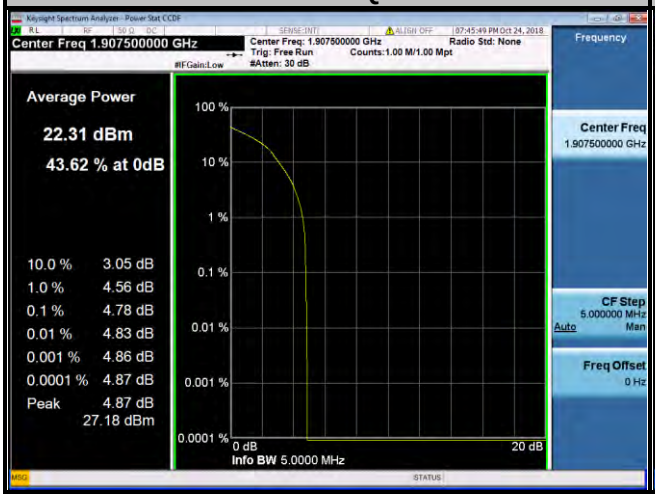


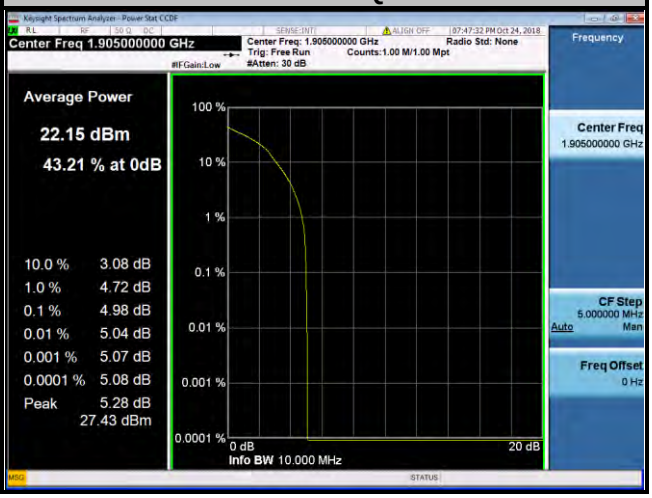
LTE Band 2									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18607	1850.7	3.52	4.44	4.66	18615	1851.5	3.41	4.64	4.78
18900	1880.0	2.87	4.04	4.30	18900	1880.0	2.94	3.85	4.24
19193	1909.3	3.96	4.85	5.21	19185	1908.5	3.64	4.81	4.93

Spectrum Plot of Worst Value	
1.4 MHz / 64QAM	3 MHz / 64QAM
	

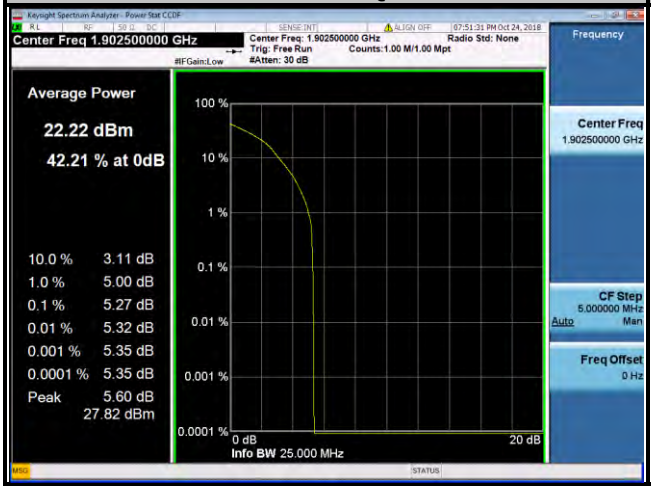
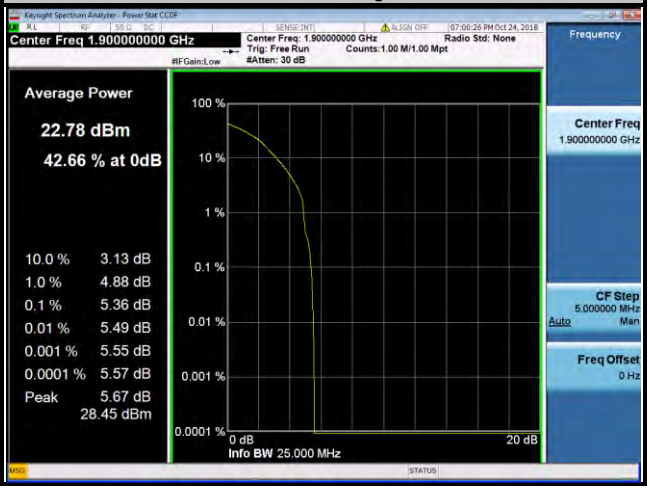
LTE Band 2									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18625	1852.5	3.39	4.74	4.75	18650	1855.0	3.55	4.55	4.63
18900	1880.0	3.01	4.06	4.15	18900	1880.0	3.22	4.16	4.56
19175	1907.5	3.74	4.66	4.78	19150	1905.0	3.73	4.67	4.98

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM





LTE Band 2									
Channel Bandwidth: 15 MHz					Channel Bandwidth: 20 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
18675	1857.5	3.48	4.35	4.96	18700	1860.0	3.49	4.10	4.74
18900	1880.0	3.35	4.65	4.62	18900	1880.0	3.93	4.79	4.81
19125	1902.5	4.16	4.98	5.27	19100	1900.0	4.25	5.36	5.21

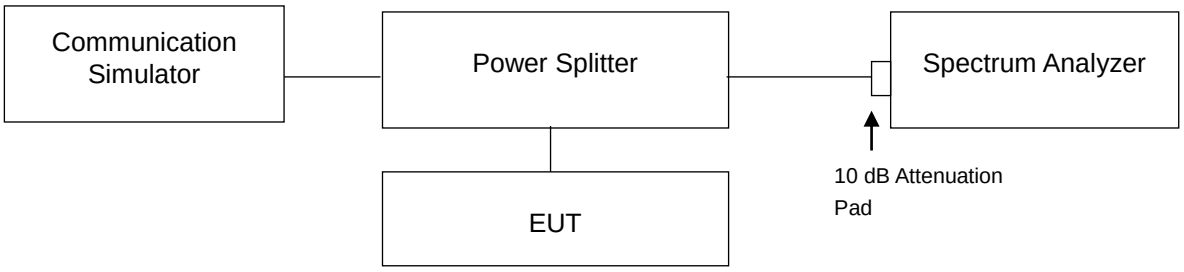
Spectrum Plot of Worst Value	
15 MHz / 64QAM	20 MHz / 16QAM
	

4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

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 -13 dBm.

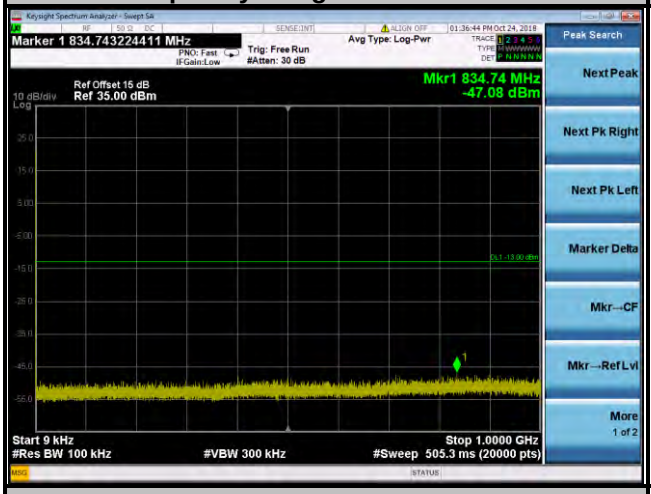
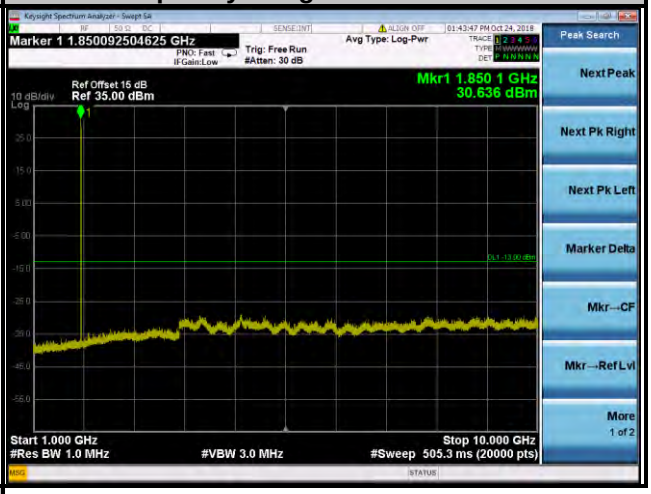
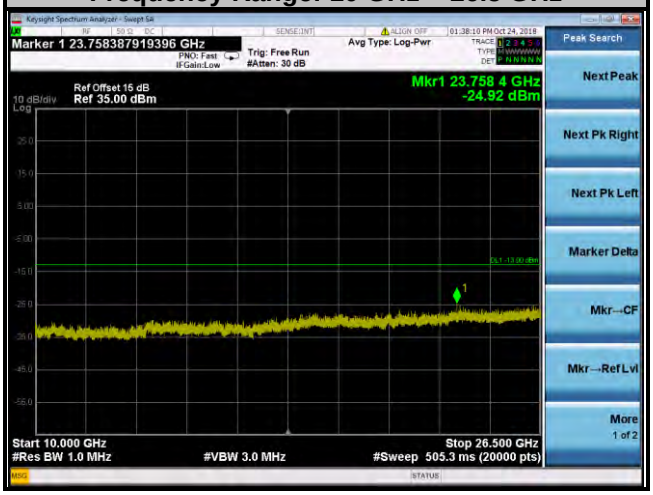
4.7.2 Test Setup



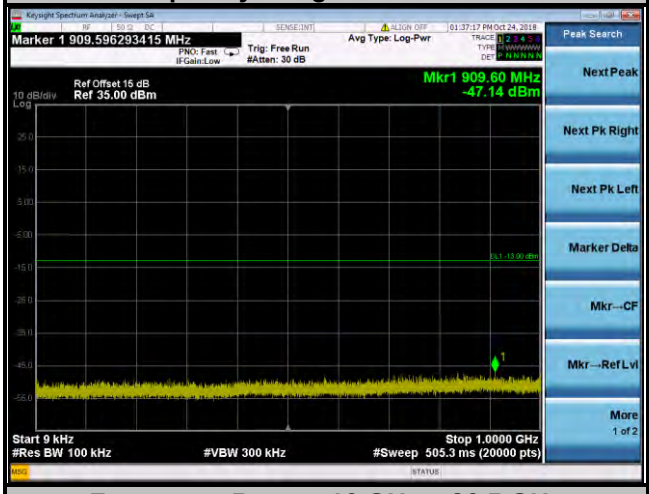
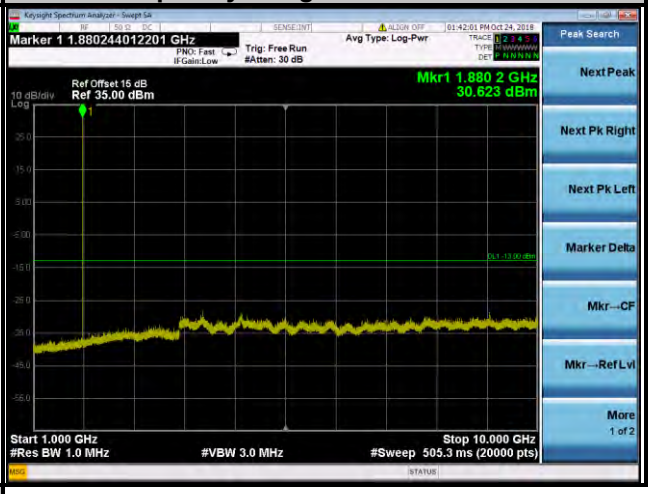
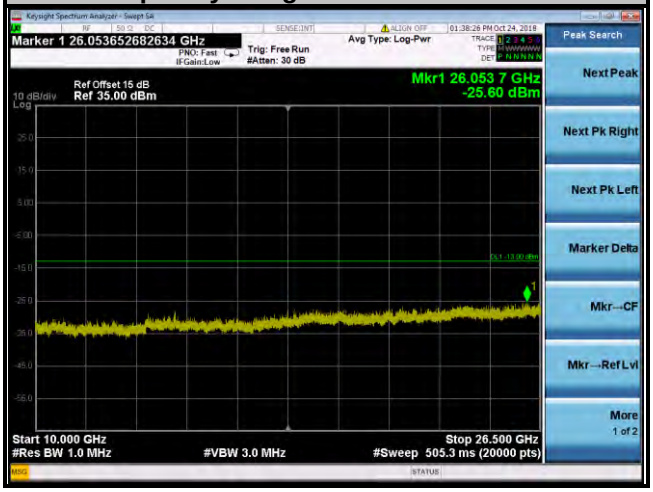
4.7.3 Test Procedure

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 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz is used for conducted emission measurement.
c. Measuring frequency range is from 1 GHz to 26.5 GHz / 27 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.

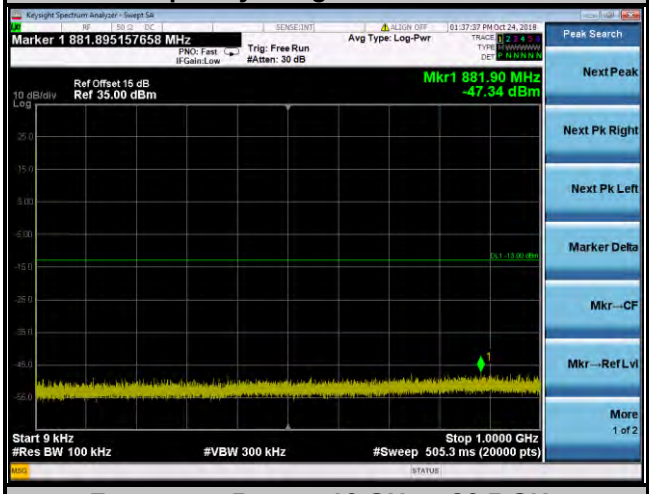
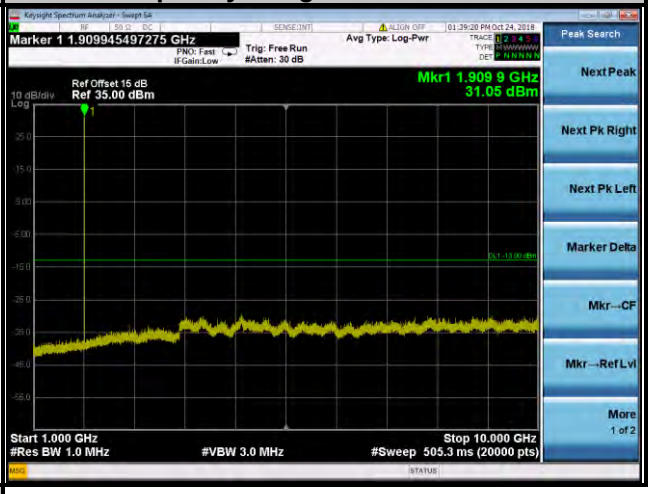
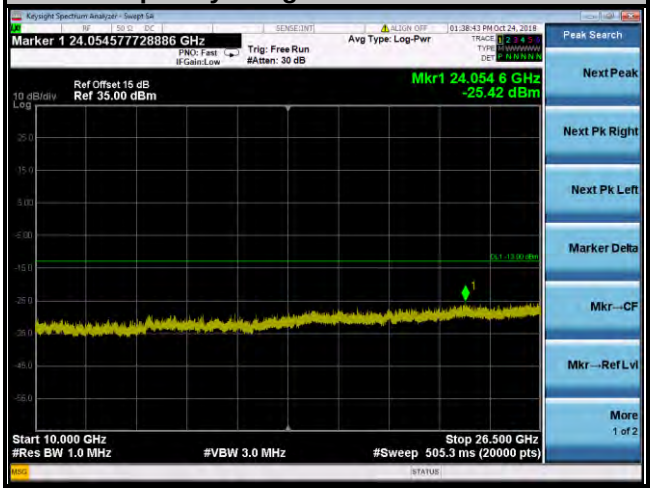
4.7.4 Test Results

GSM	
Channel 512	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

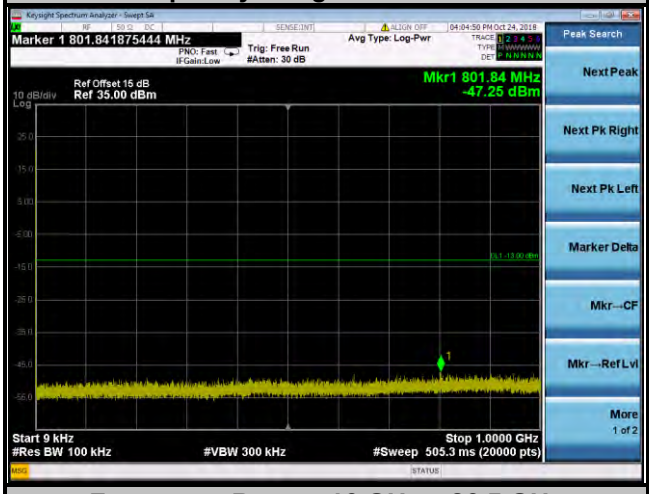
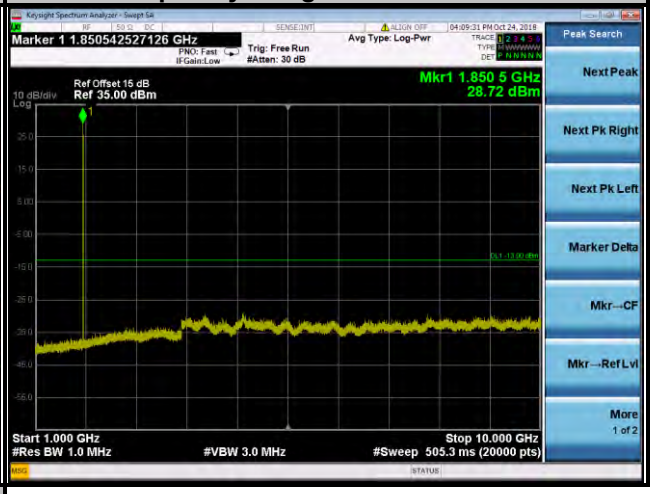
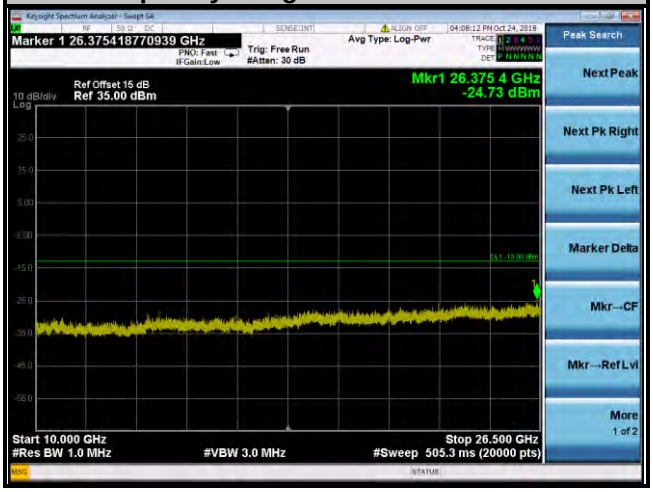
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

GSM	
Channel 661	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

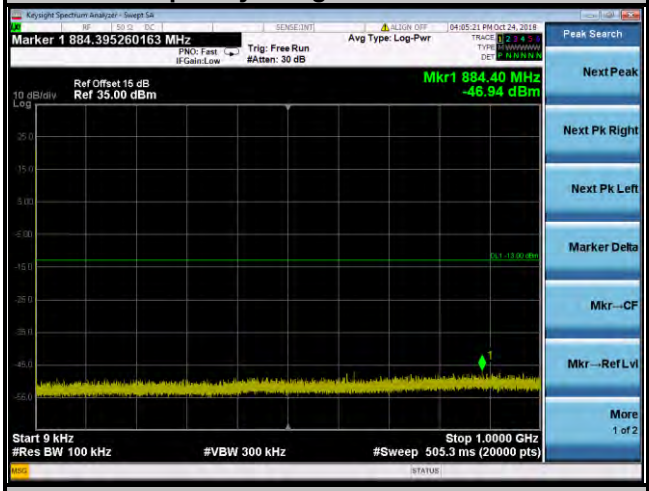
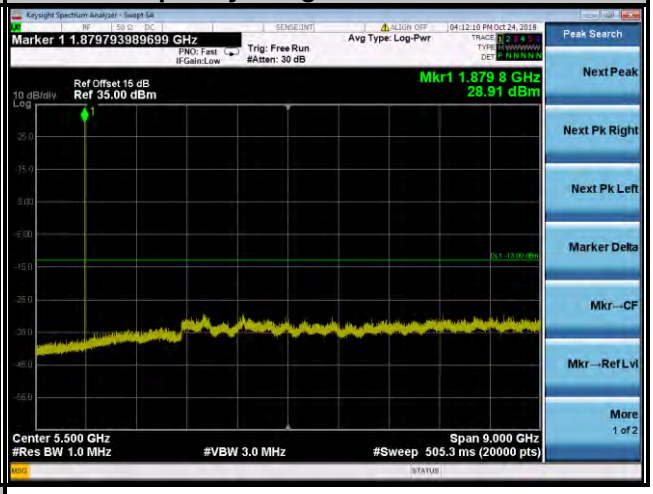
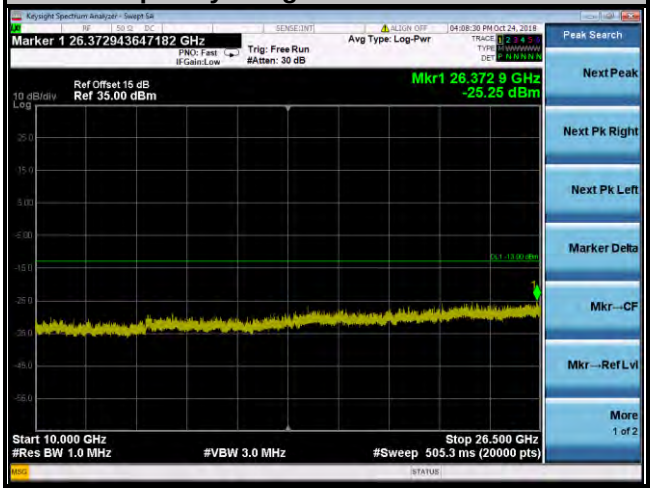
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

GSM	
Channel 810	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

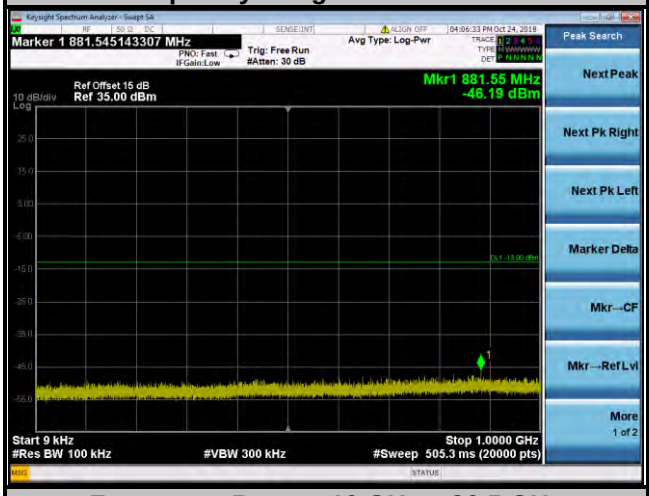
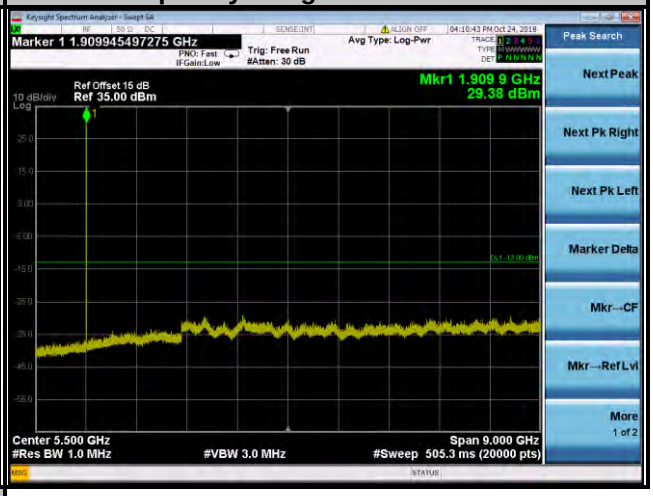
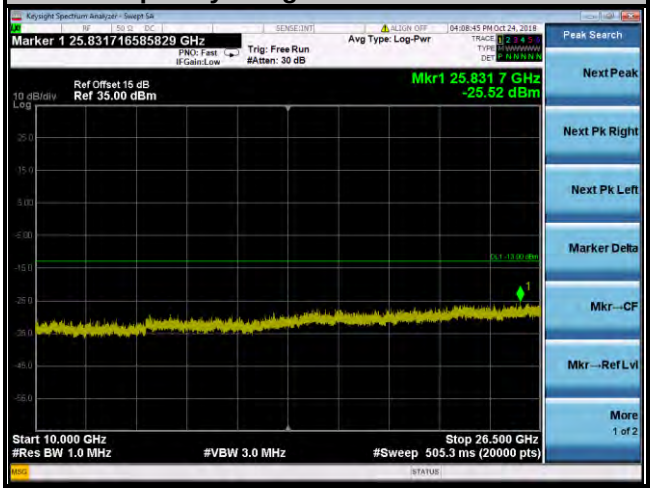
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

EDGE	
Channel 512	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

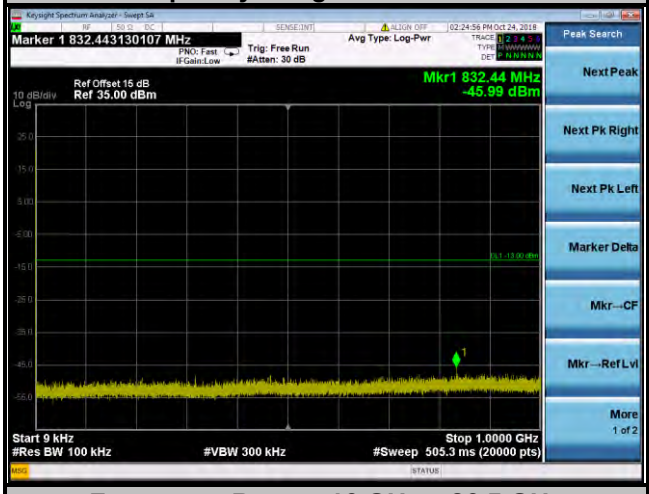
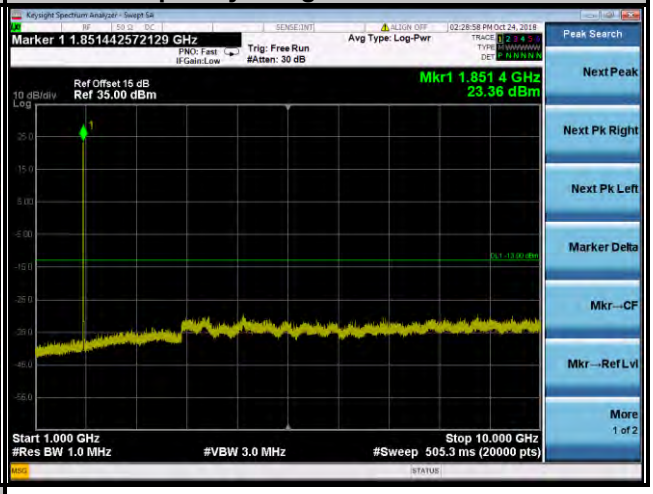
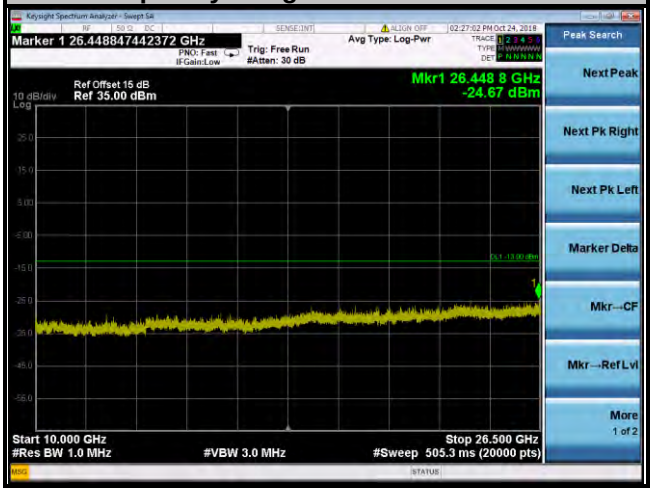
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

EDGE	
Channel 661	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

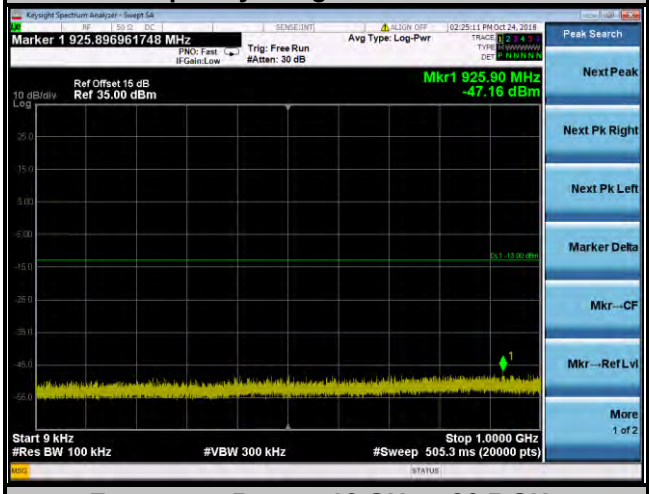
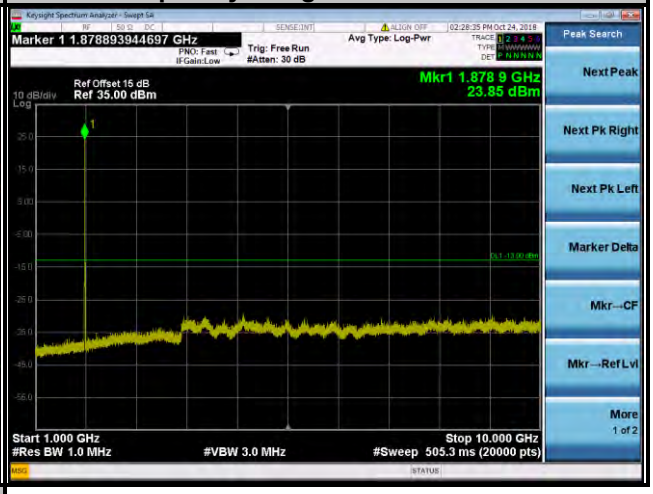
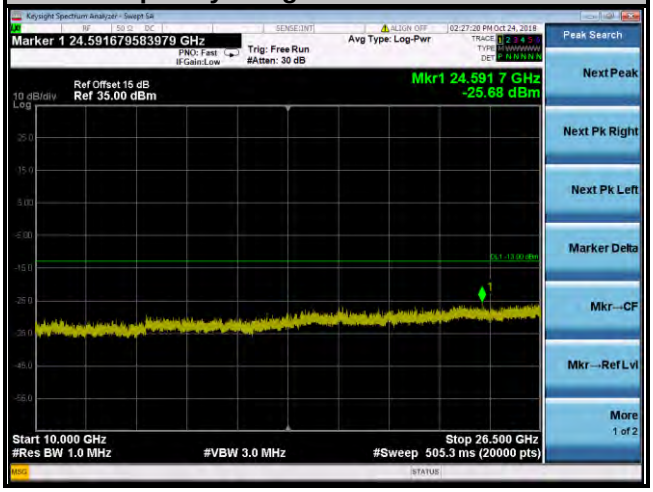
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

EDGE	
Channel 810	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

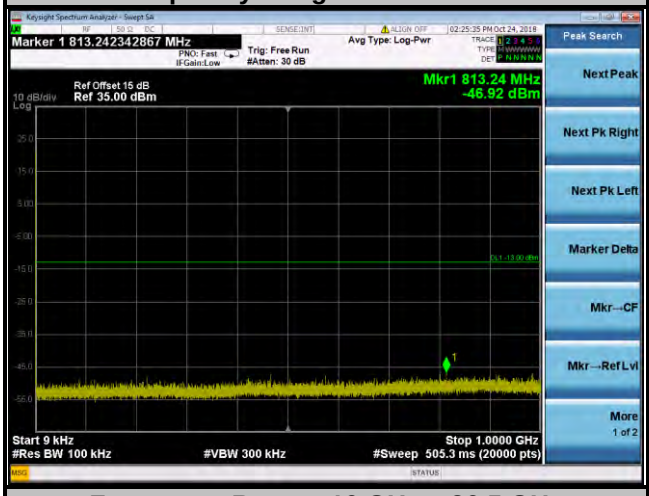
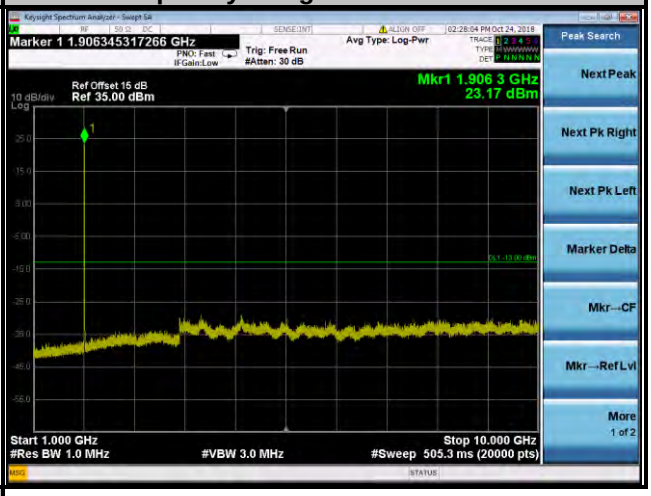
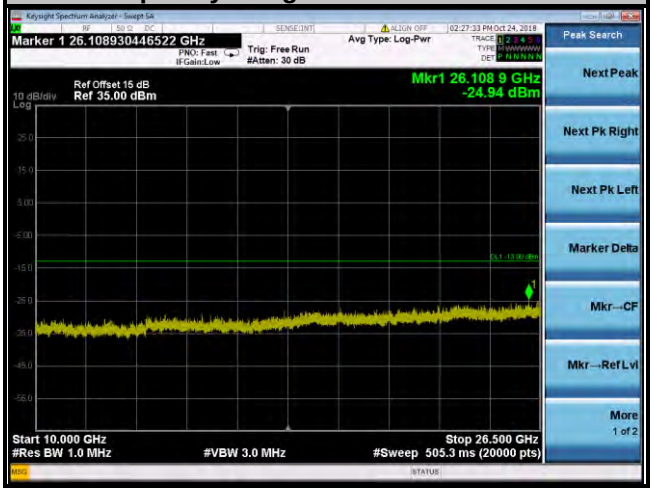
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

WCDMA	
Channel 9262	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

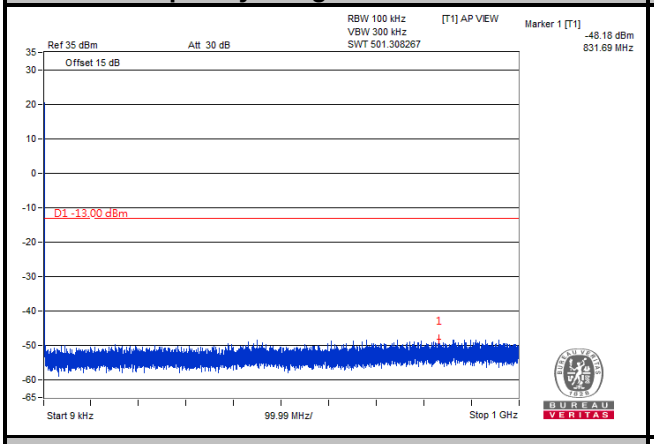
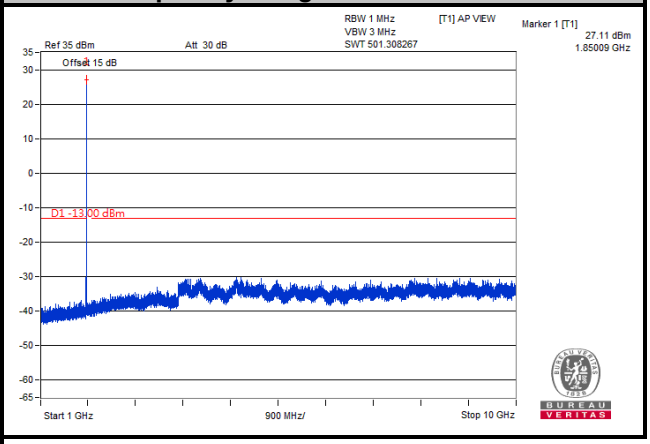
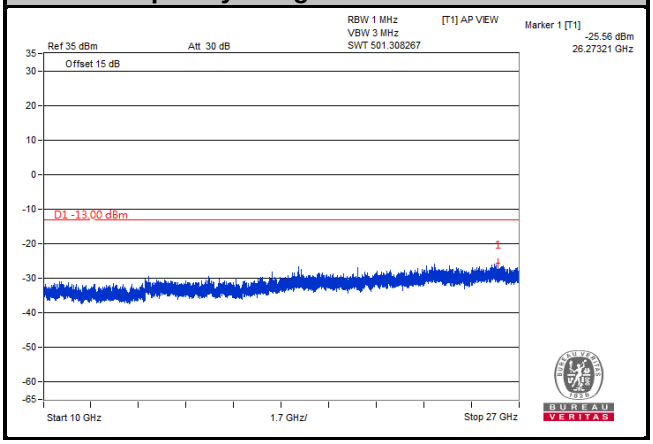
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

WCDMA	
Channel 9400	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

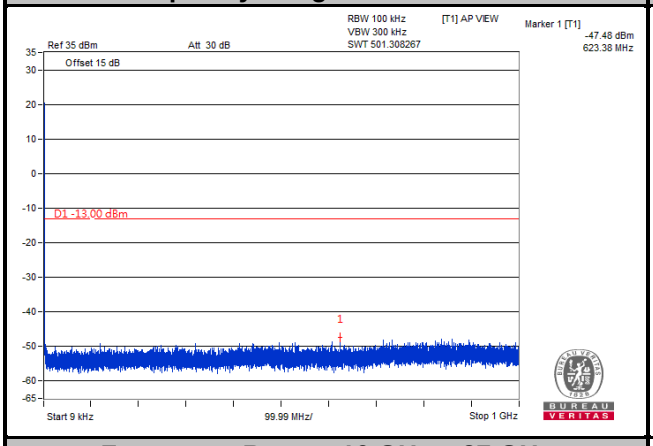
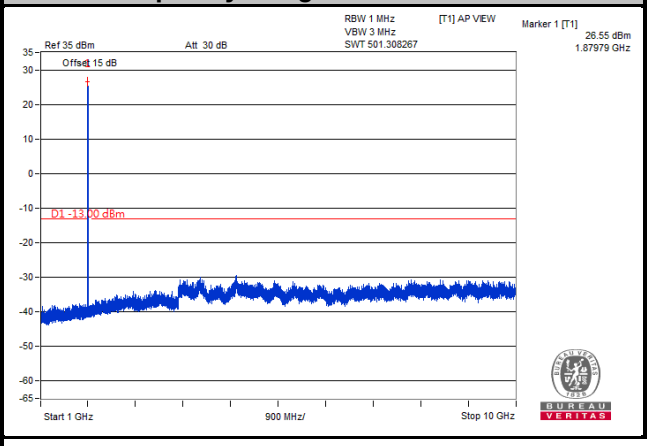
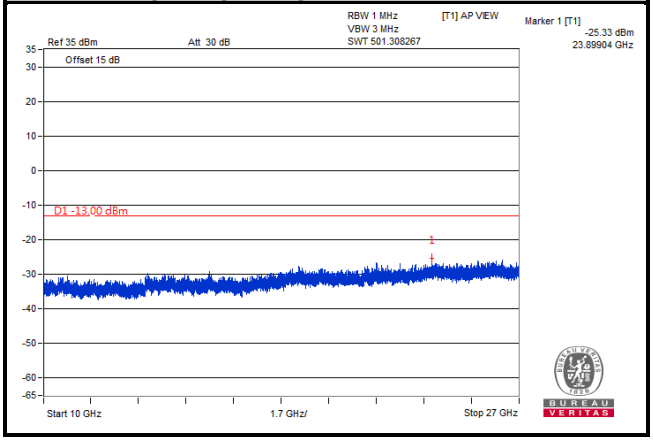
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

WCDMA	
Channel 9538	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 26.5 GHz	
	

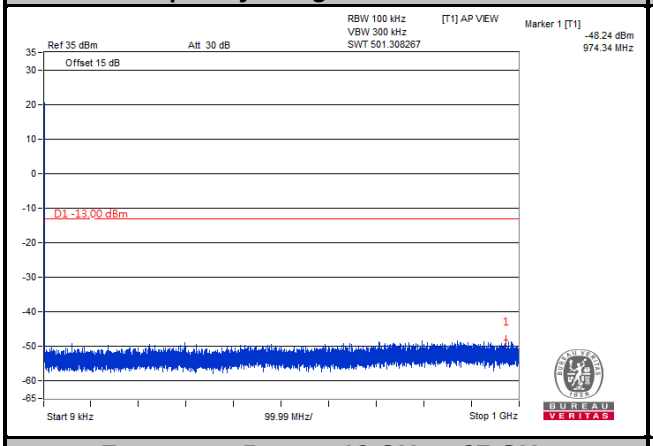
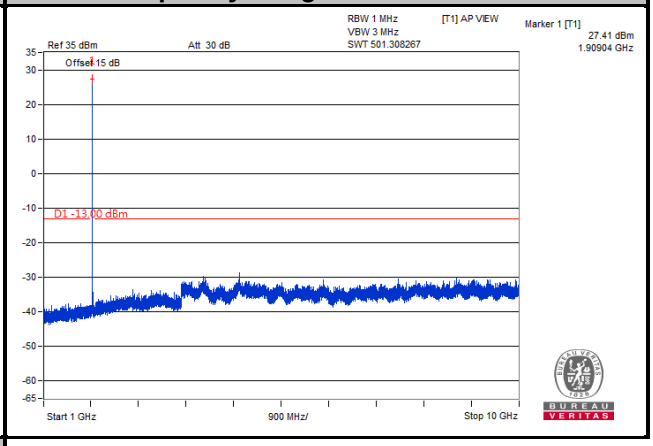
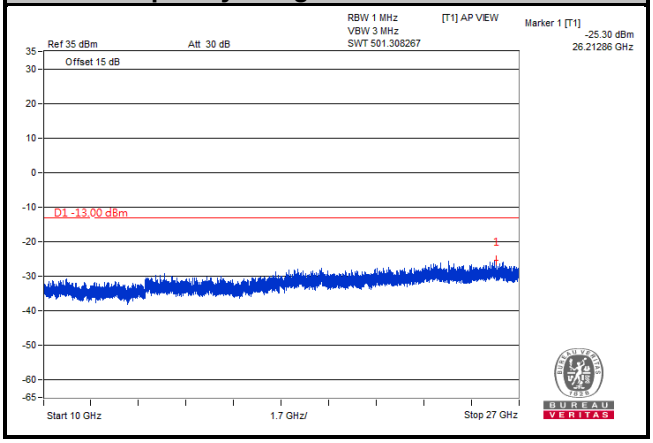
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 1.4 MHz	
Channel 18607	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

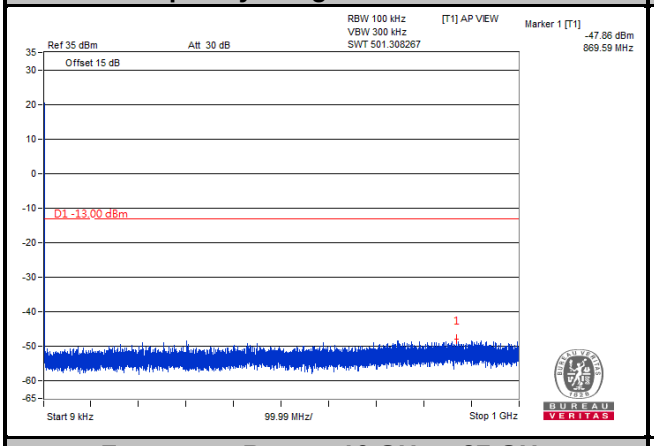
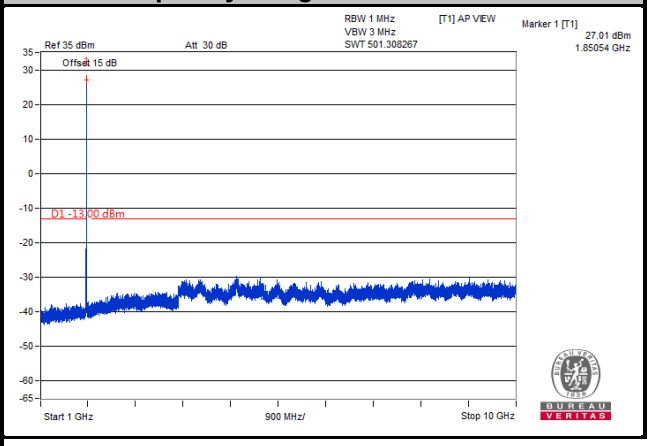
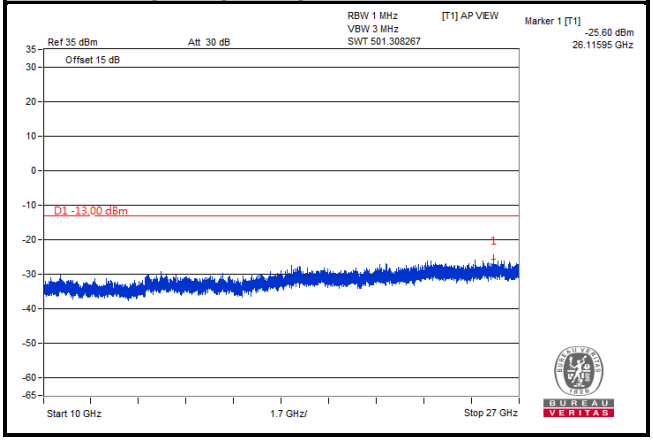
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 1.4 MHz	
Channel 18900	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

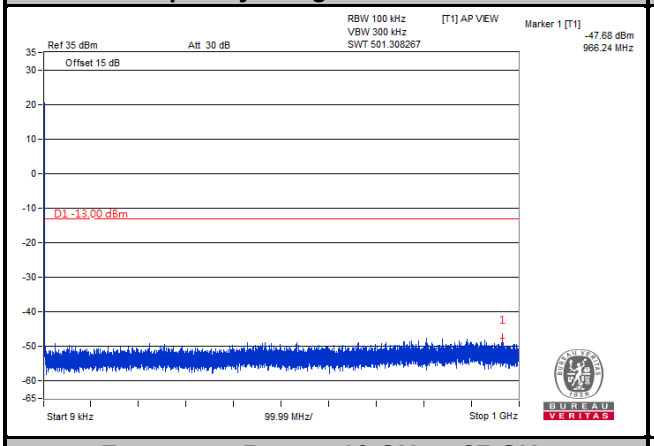
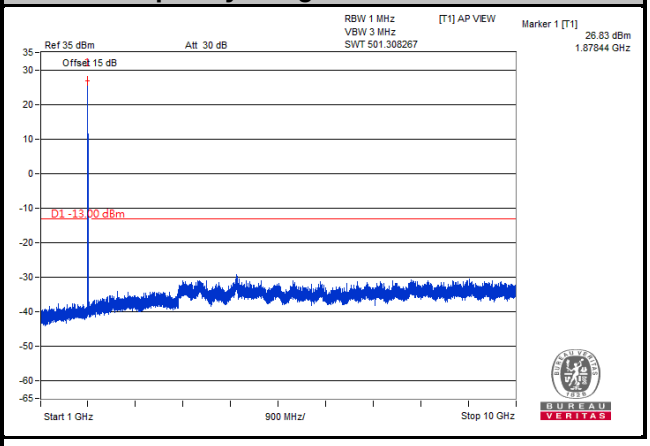
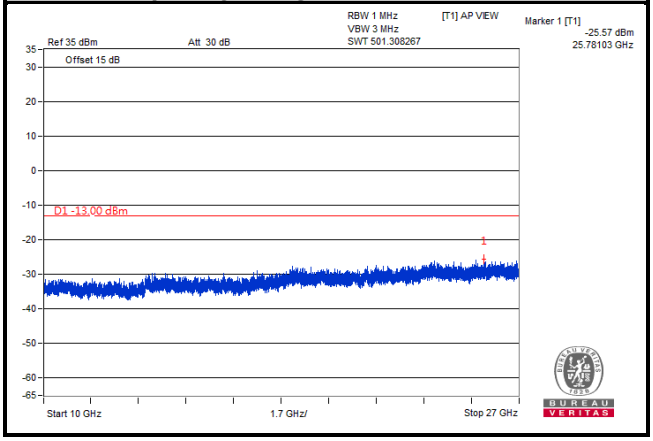
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 1.4 MHz	
Channel 19193	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

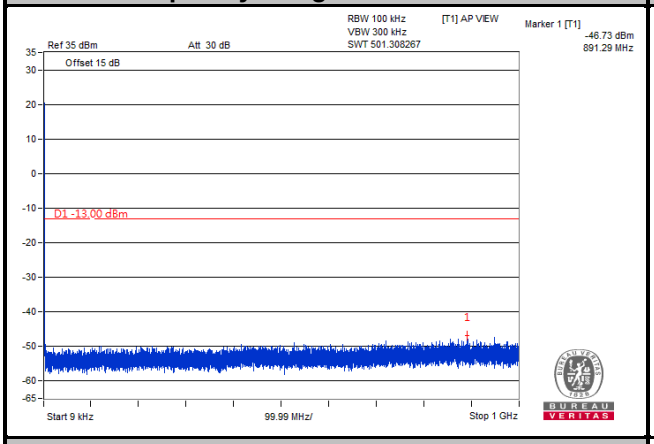
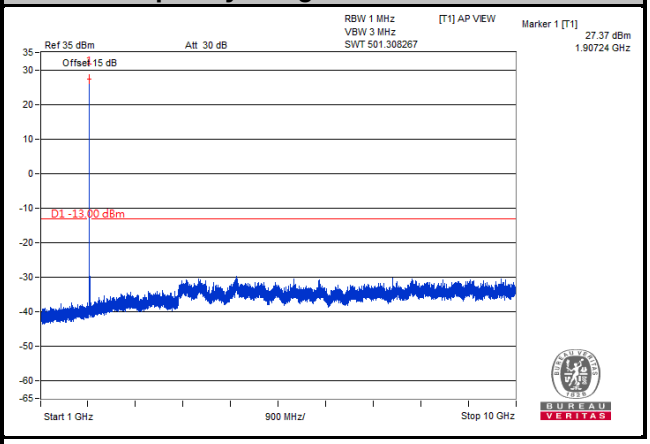
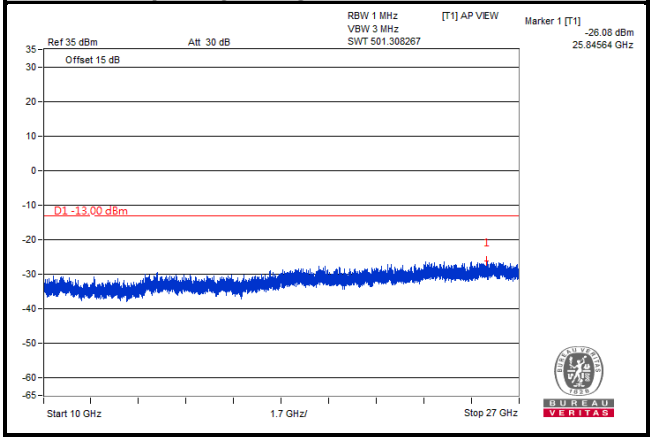
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 3 MHz	
Channel 18615	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

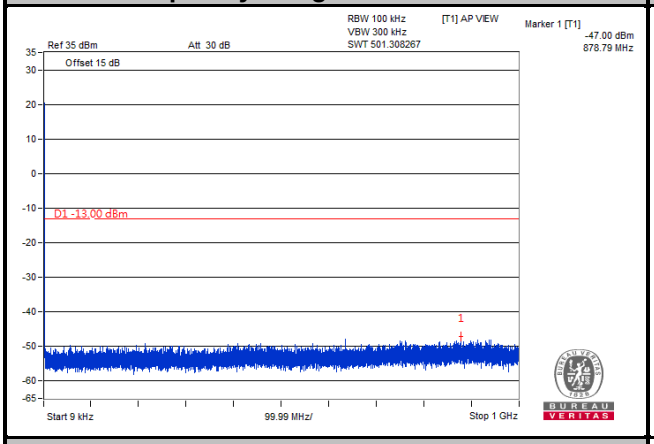
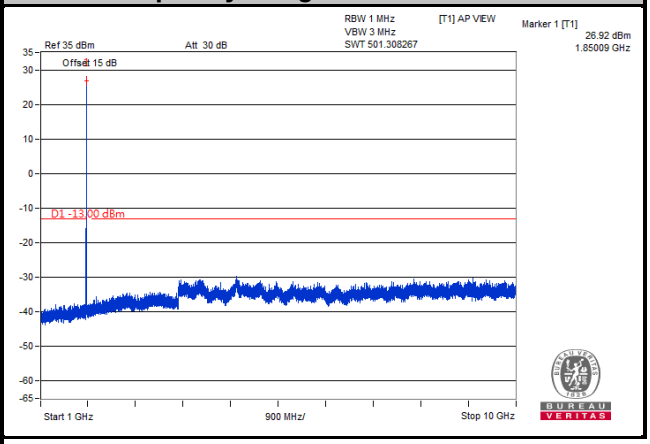
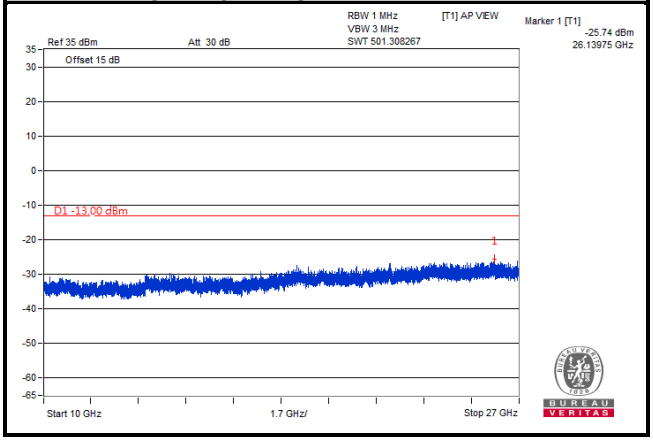
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 3 MHz	
Channel 18900	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

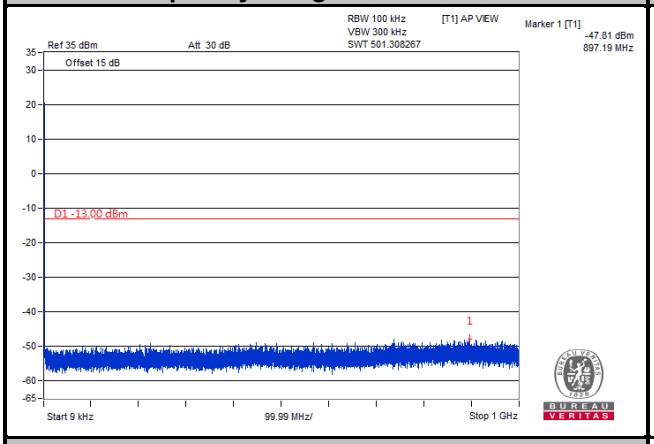
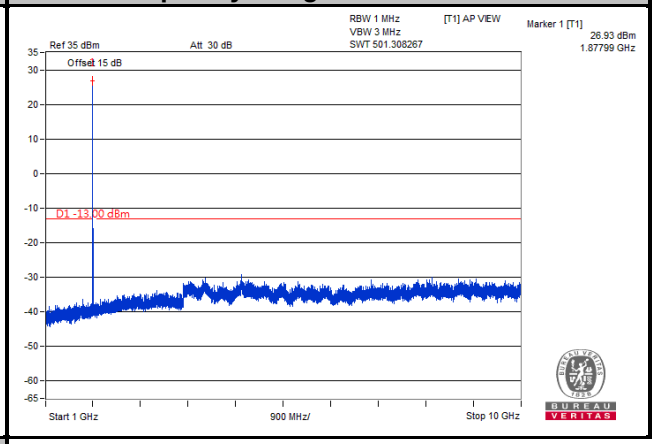
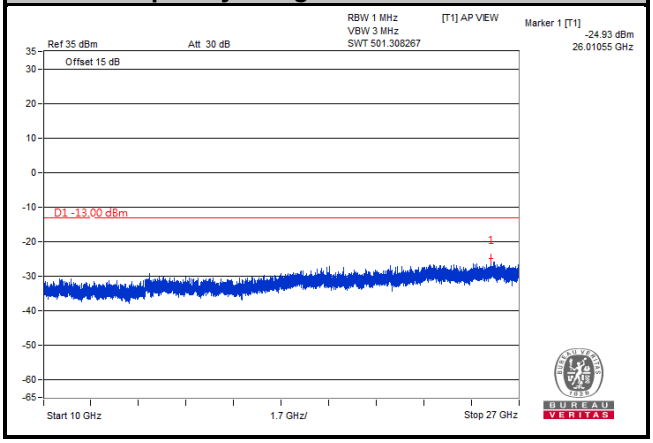
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 3 MHz	
Channel 19185	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

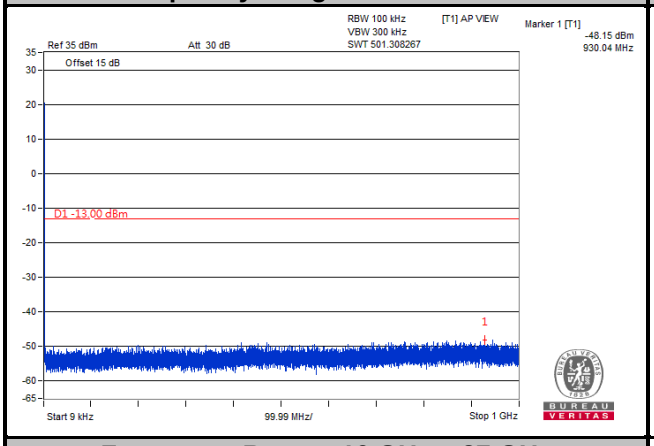
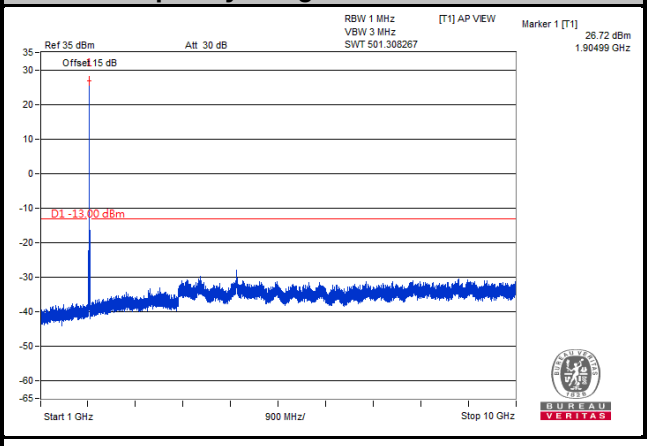
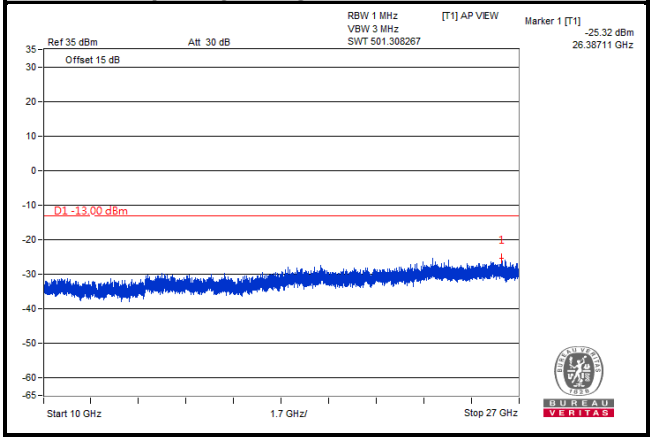
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 5 MHz	
Channel 18625	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

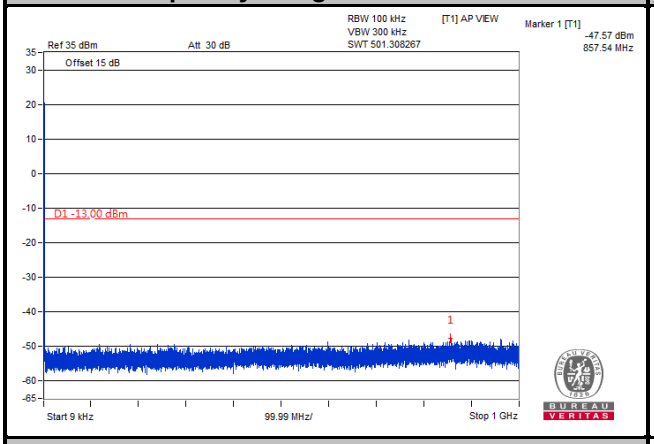
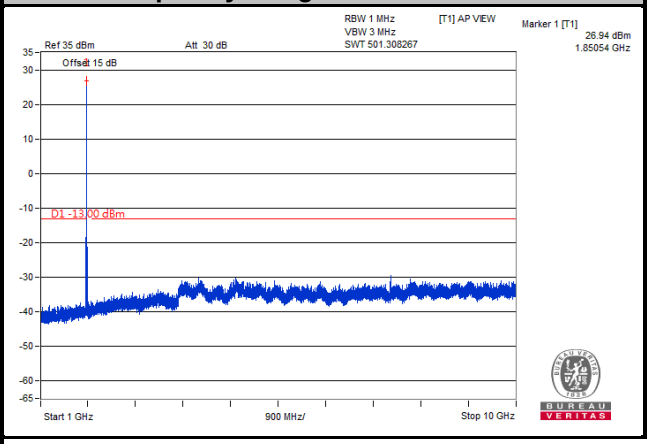
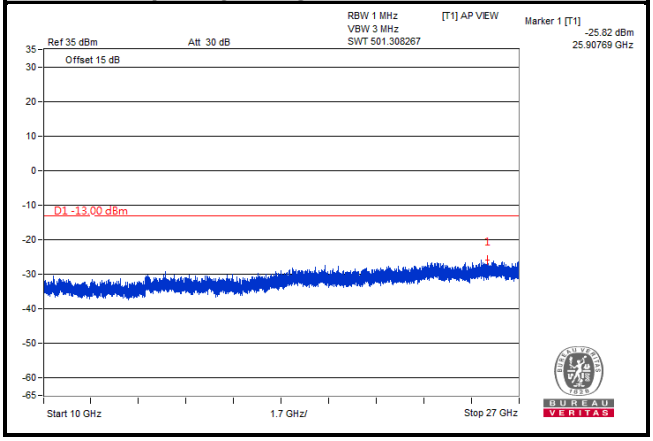
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 5 MHz	
Channel 18900	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

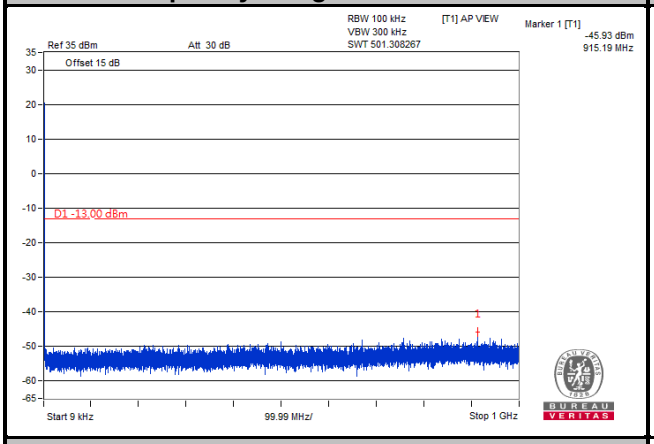
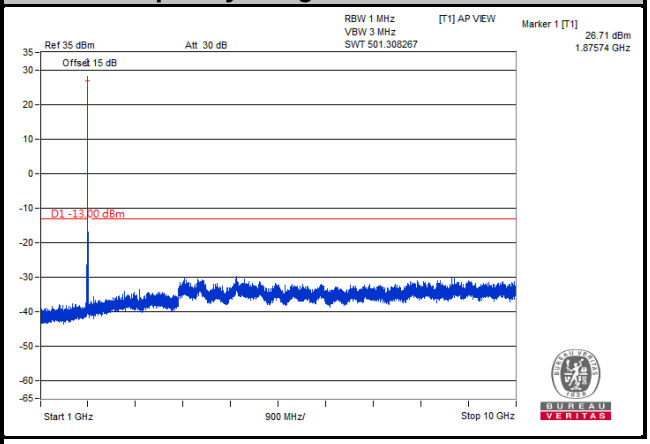
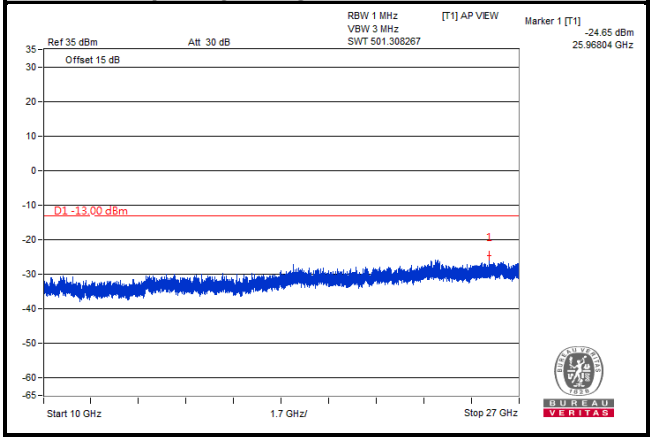
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

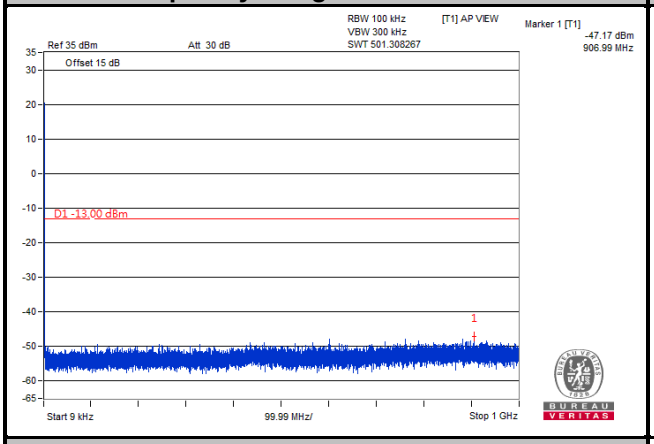
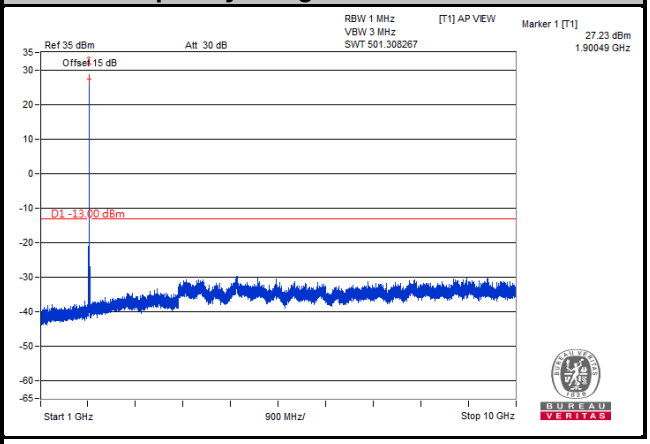
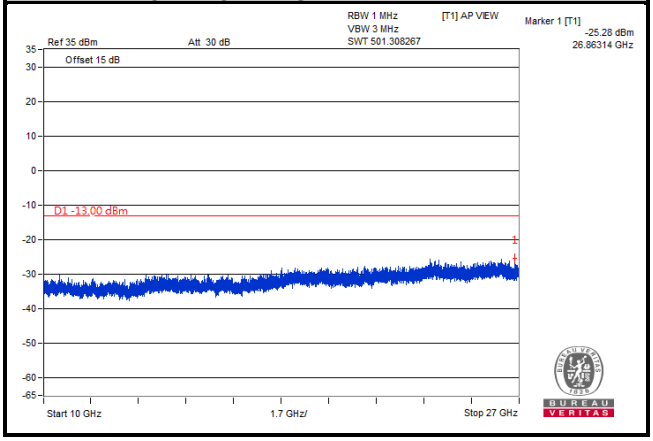
LTE Band 2	
Channel Bandwidth: 5 MHz	
Channel 19175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

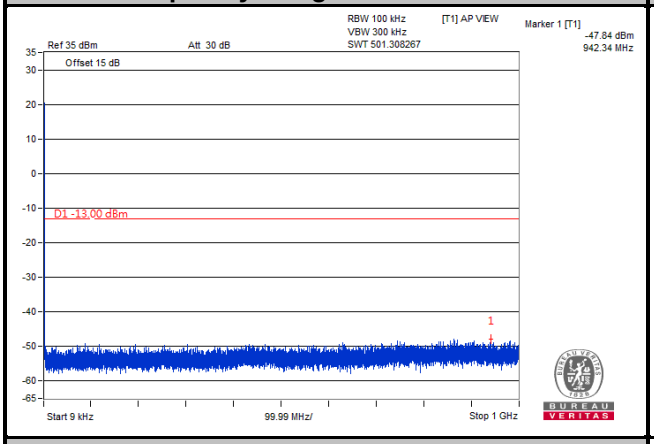
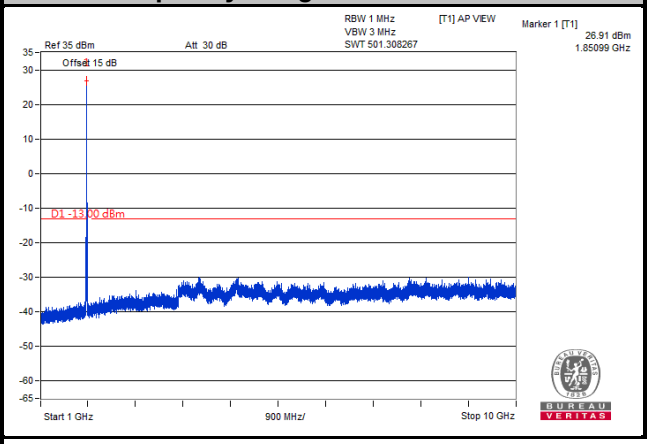
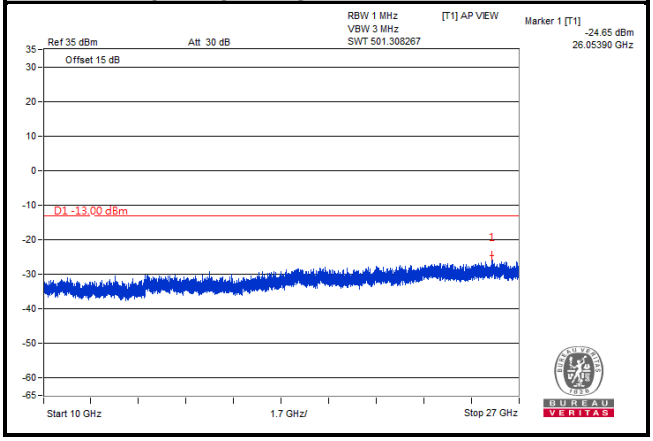
LTE Band 2	
Channel Bandwidth: 10 MHz	
Channel 18650	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

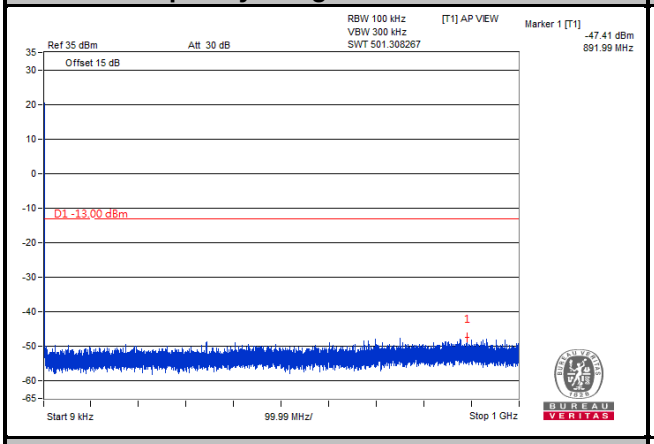
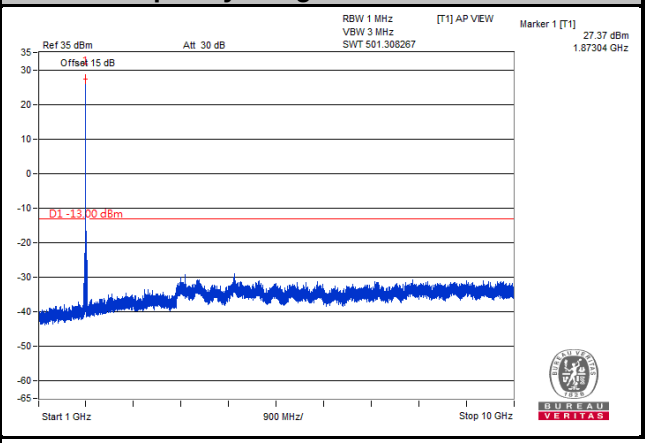
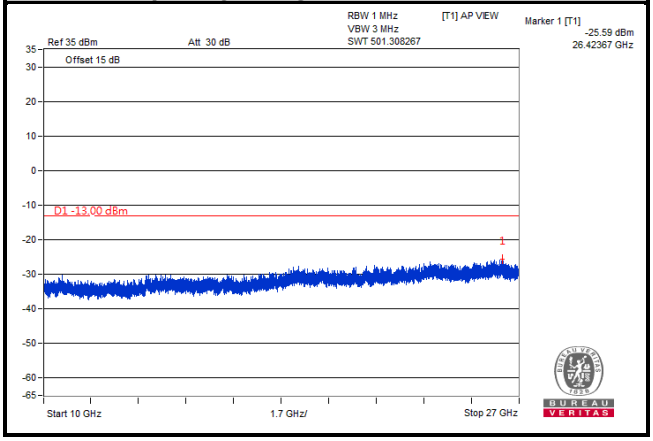
LTE Band 2	
Channel Bandwidth: 10 MHz	
Channel 18900	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

LTE Band 2	
Channel Bandwidth: 10 MHz	
Channel 19150	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

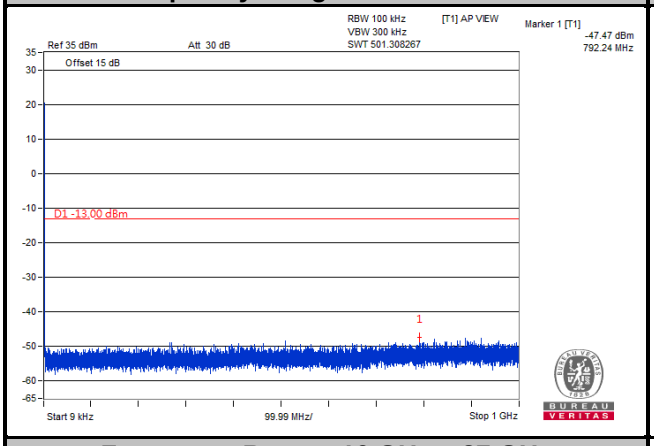
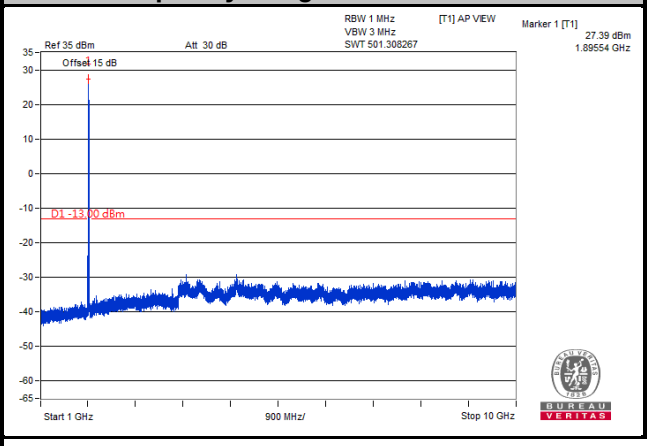
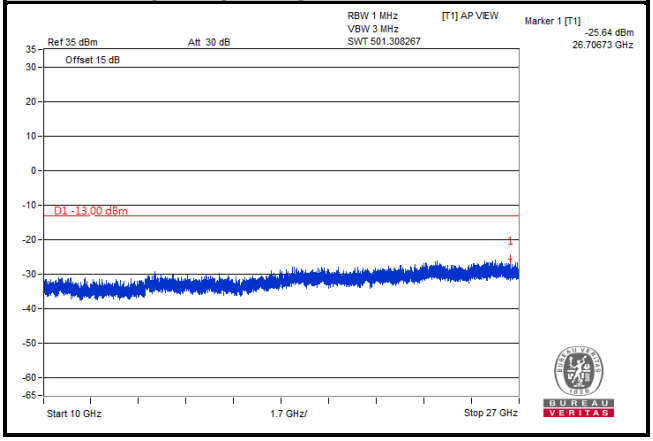
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 15 MHz	
Channel 18675	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

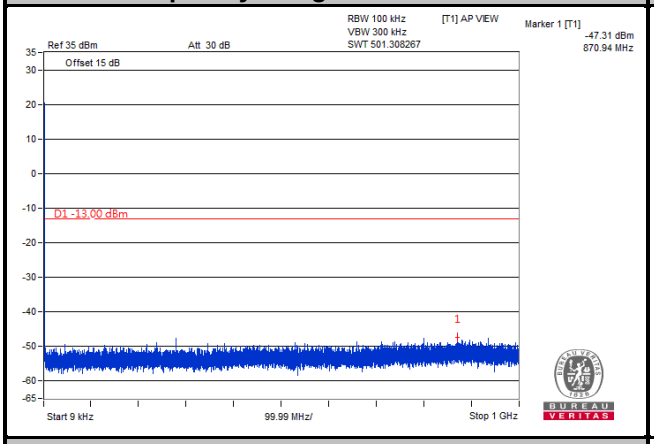
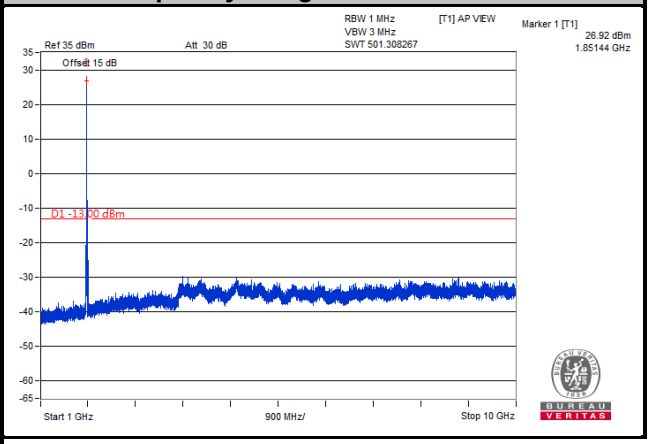
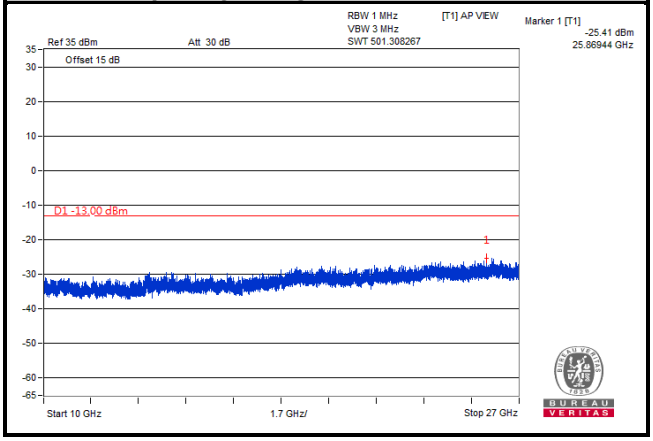
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 15 MHz	
Channel 18900	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

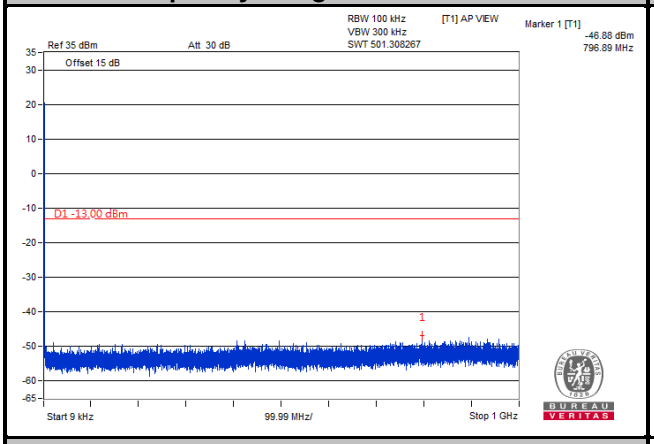
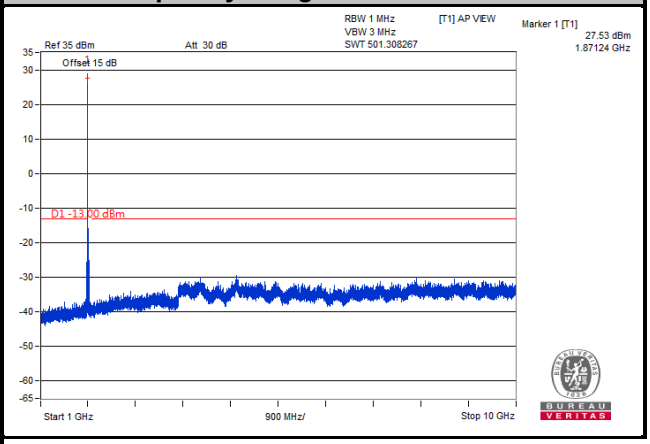
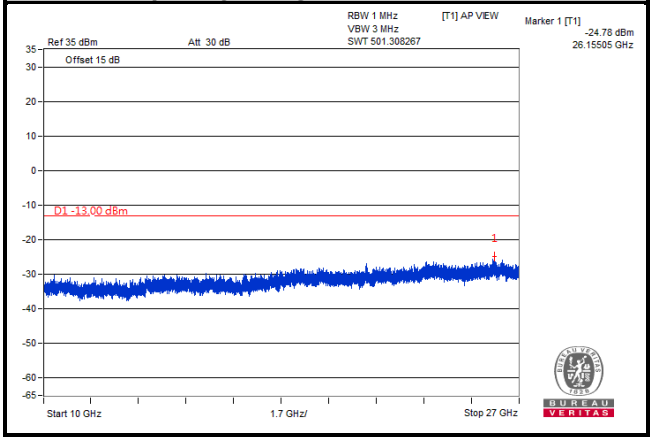
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 15 MHz	
Channel 19125	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

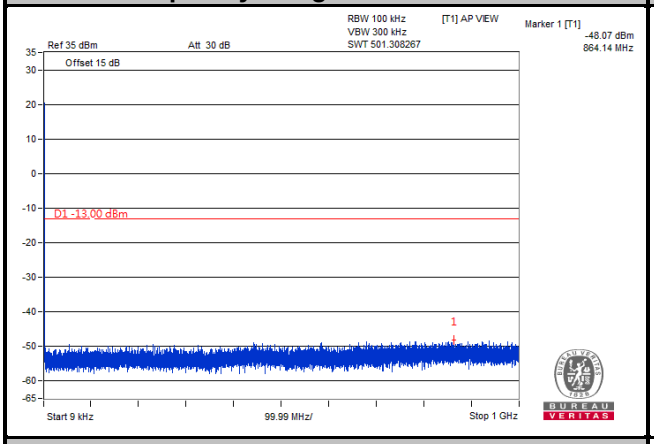
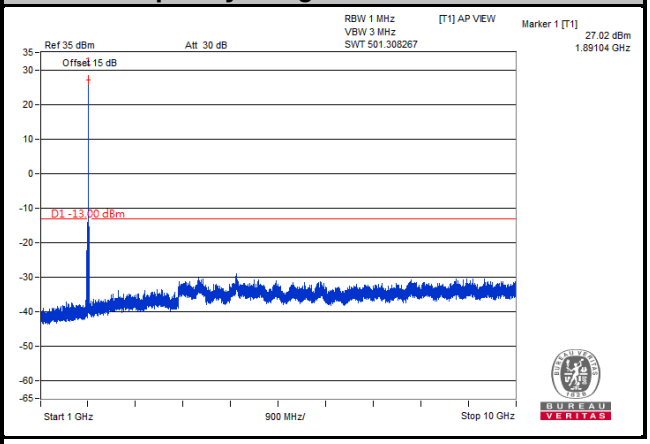
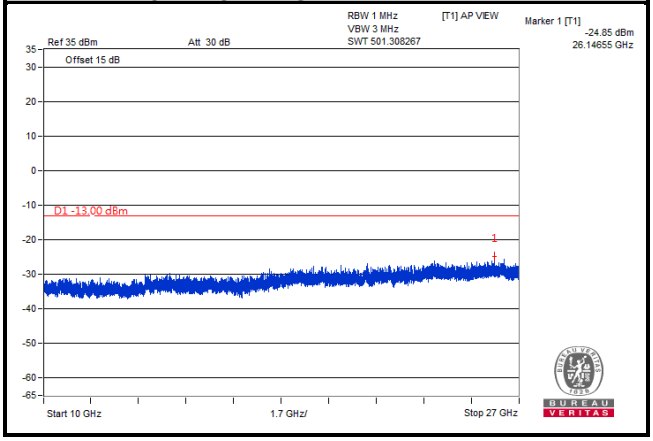
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 20 MHz	
Channel 18700	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 20 MHz	
Channel 18900	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 2	
Channel Bandwidth: 20 MHz	
Channel 19100	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Frequency Range: 10 GHz ~ 27 GHz	
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

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 is equal to -13 dBm.

4.8.2 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. 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.
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. 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 - 2.15 dB.

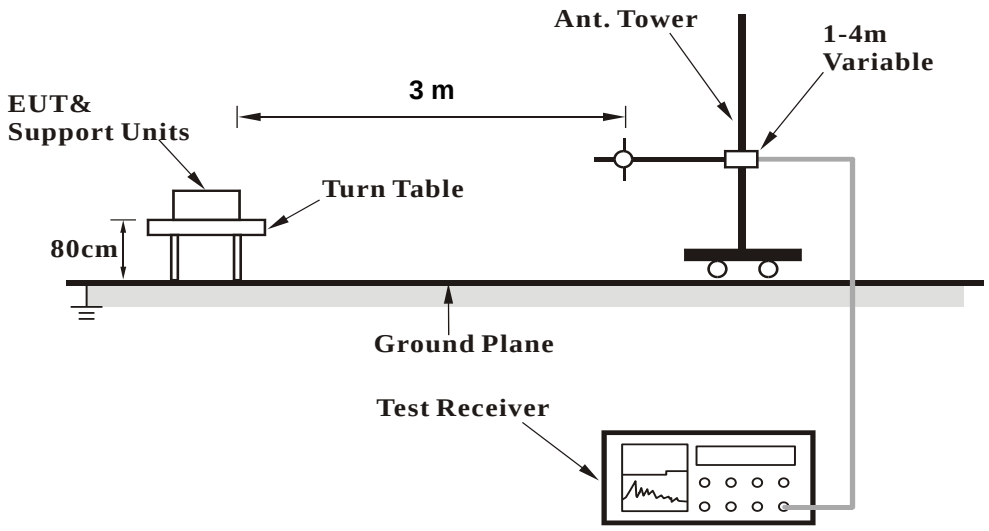
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

4.8.3 Deviation from Test Standard

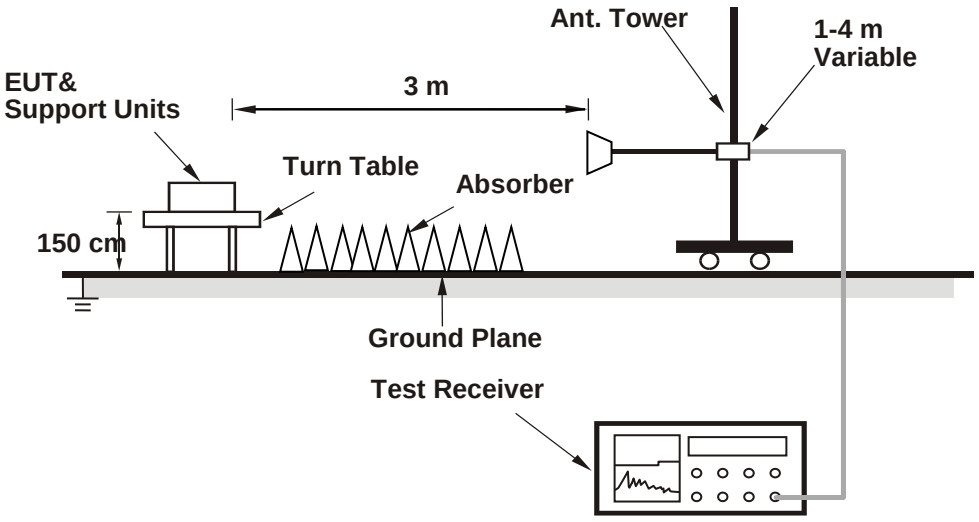
No deviation.

4.8.4 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).

4.8.5 Test Results

GSM:

Low Channel

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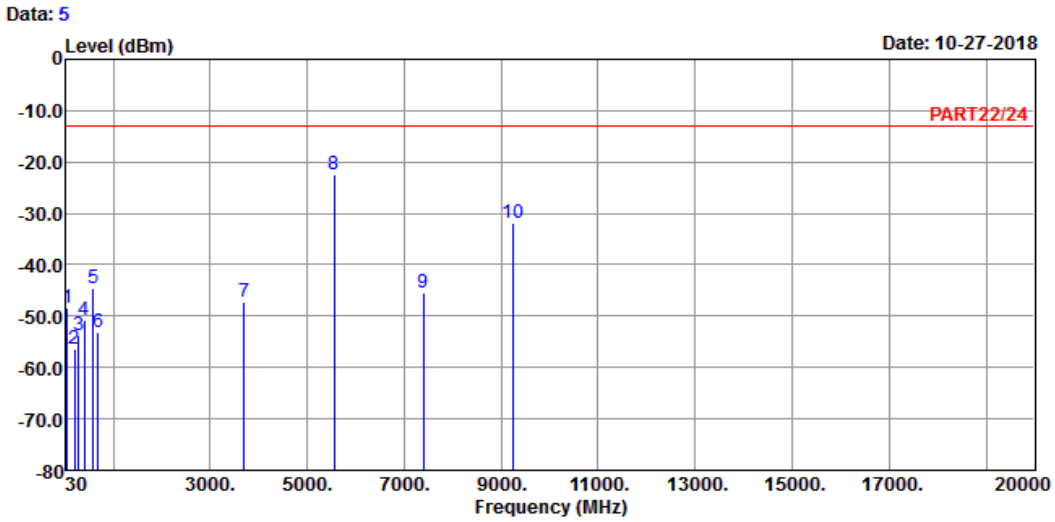
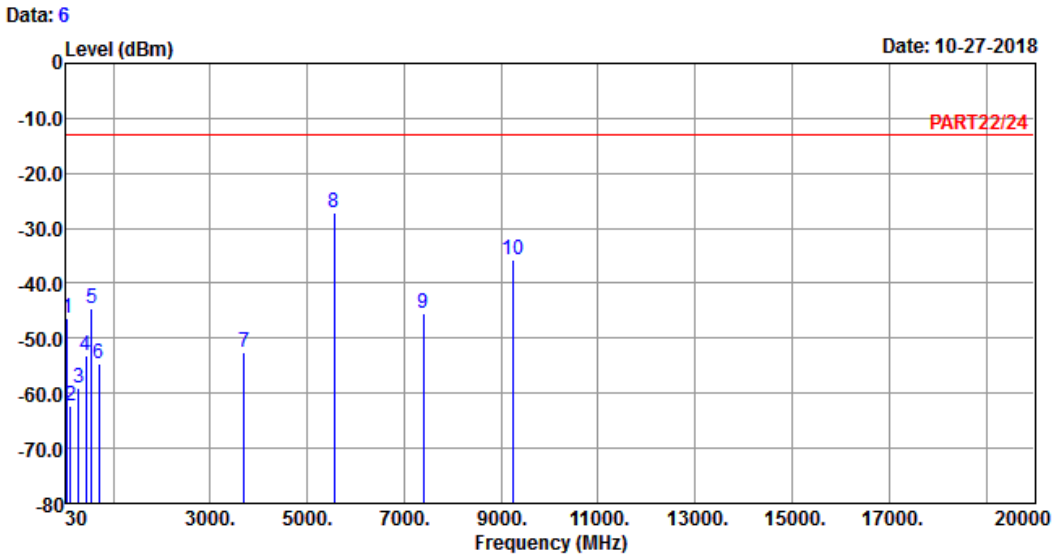


Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : GPRS 1900 Link_L-CH
Tested by: Thomas Wei

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
		MHz	dBm	dBm	dBm	dB	dB	
1		44.55	-48.35	-46.36	-13.00	-35.35	-1.99	Peak
2		209.45	-56.34	-48.71	-13.00	-43.34	-7.63	Peak
3		282.20	-53.70	-47.05	-13.00	-40.70	-6.65	Peak
4		411.21	-50.89	-45.03	-13.00	-37.89	-5.86	Peak
5		588.72	-44.67	-43.43	-13.00	-31.67	-1.24	Peak
6		695.42	-53.11	-52.94	-13.00	-40.11	-0.17	Peak
7		3700.40	-47.11	-40.18	-13.00	-34.11	-6.93	Peak
8	pp	5550.60	-22.54	-20.64	-13.00	-9.54	-1.90	Peak
9		7400.80	-45.47	-49.58	-13.00	-32.47	4.11	Peak
10		9251.00	-31.92	-36.82	-13.00	-18.92	4.90	Peak

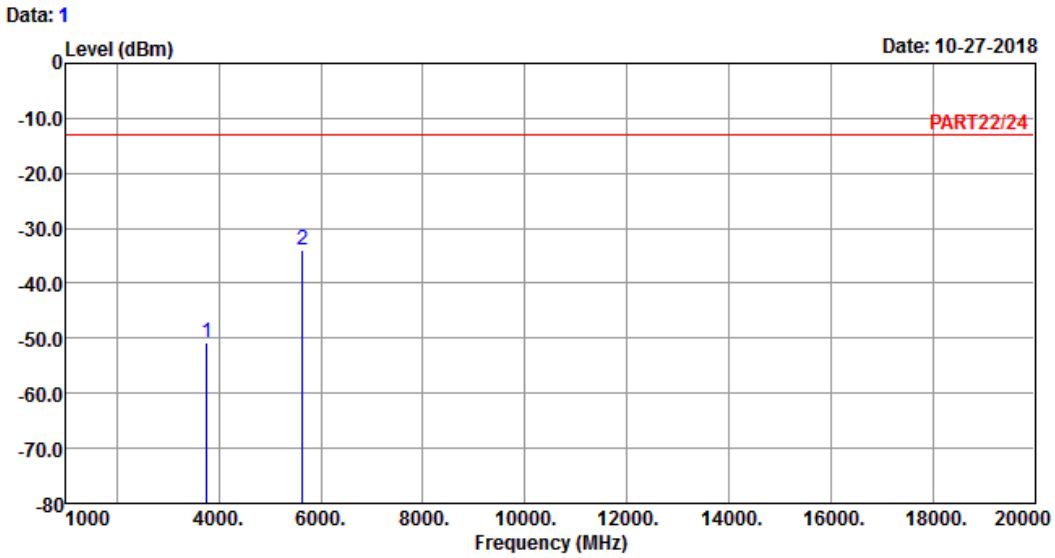


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : GPRS 1900 Link_L-CH
Tested by: Thomas Wei

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
		MHz	dBm	dBm	dBm	dB	dB	
1		44.55	-46.20	-44.21	-13.00	-33.20	-1.99	Peak
2		112.45	-62.26	-52.06	-13.00	-49.26	-10.20	Peak
3		282.20	-59.01	-52.36	-13.00	-46.01	-6.65	Peak
4		439.34	-53.06	-47.43	-13.00	-40.06	-5.63	Peak
5		547.01	-44.57	-41.62	-13.00	-31.57	-2.95	Peak
6		700.27	-54.57	-54.47	-13.00	-41.57	-0.10	Peak
7		3700.40	-52.51	-45.58	-13.00	-39.51	-6.93	Peak
8	pp	5550.60	-27.06	-25.16	-13.00	-14.06	-1.90	Peak
9		7400.80	-45.55	-49.66	-13.00	-32.55	4.11	Peak
10		9251.00	-35.77	-40.67	-13.00	-22.77	4.90	Peak

Middle Channel

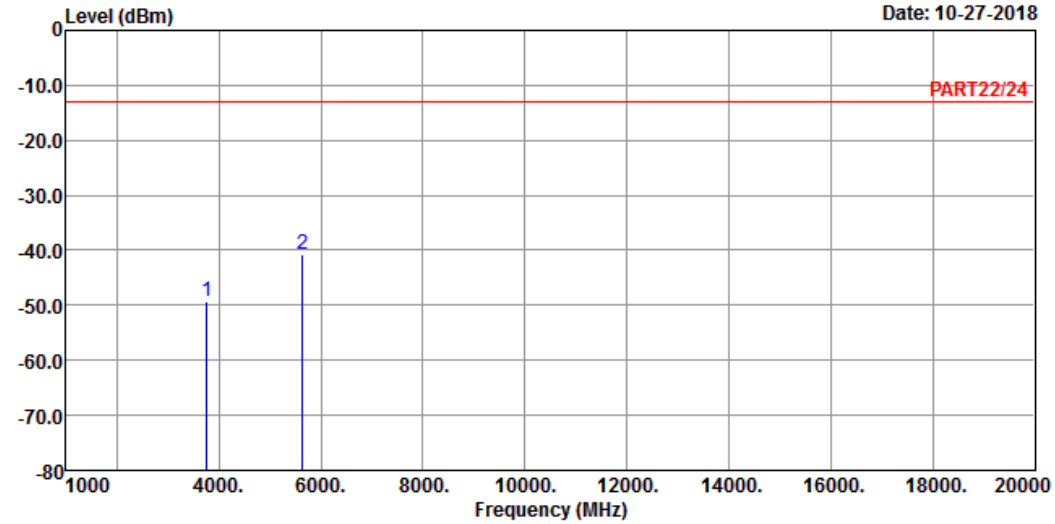
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : GPRS 1900 Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-50.91	-44.26	-13.00	-37.91	-6.65	Peak
2 pp	5640.00	-34.08	-32.22	-13.00	-21.08	-1.86	Peak

Data: 2

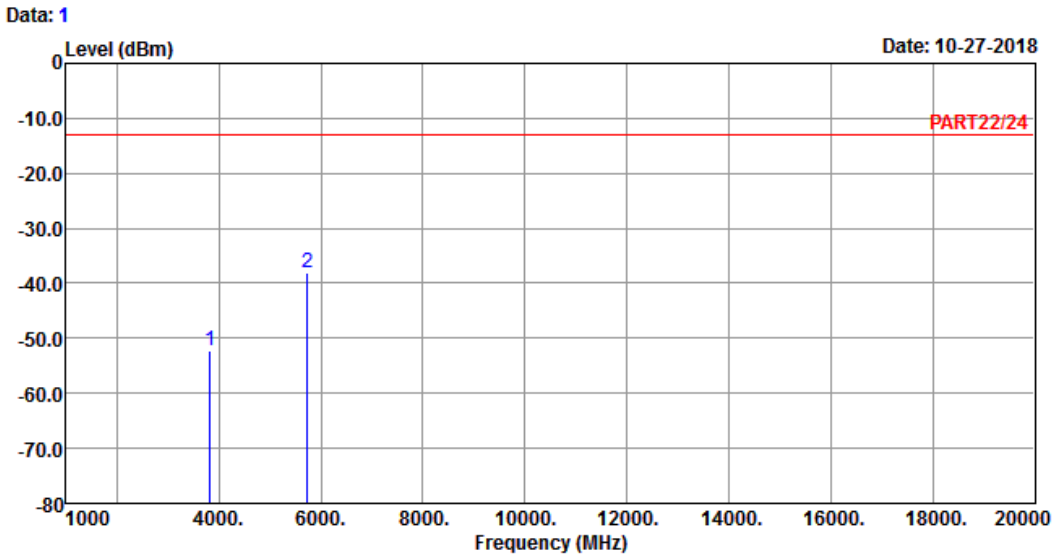


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : GPRS 1900 Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-49.44	-42.79	-13.00	-36.44	-6.65	Peak
2 pp	5640.00	-40.75	-38.89	-13.00	-27.75	-1.86	Peak

High Channel

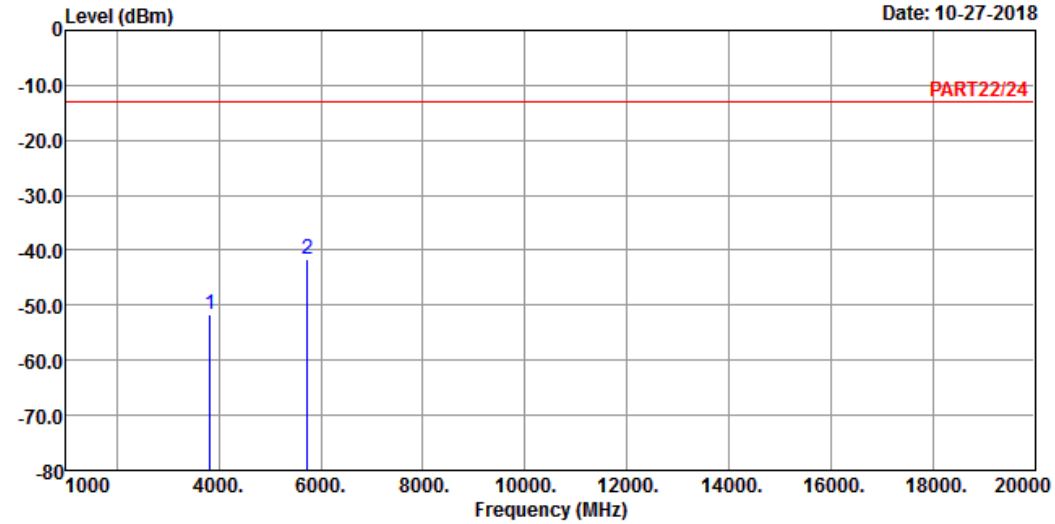
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : GPRS 1900 Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3819.60	-52.19	-45.79	-13.00	-39.19	-6.40	Peak
2 pp	5729.40	-38.04	-36.39	-13.00	-25.04	-1.65	Peak

Data: 2



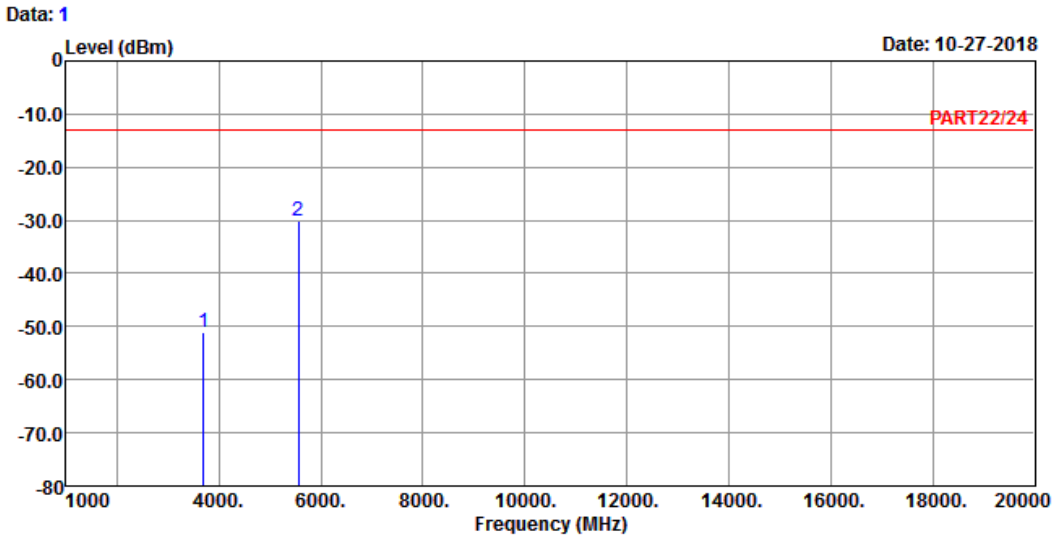
Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : GPRS 1900 Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3819.60	-51.78	-45.38	-13.00	-38.78	-6.40	Peak
2 pp	5729.40	-41.58	-39.93	-13.00	-28.58	-1.65	Peak

EDGE:

Low Channel

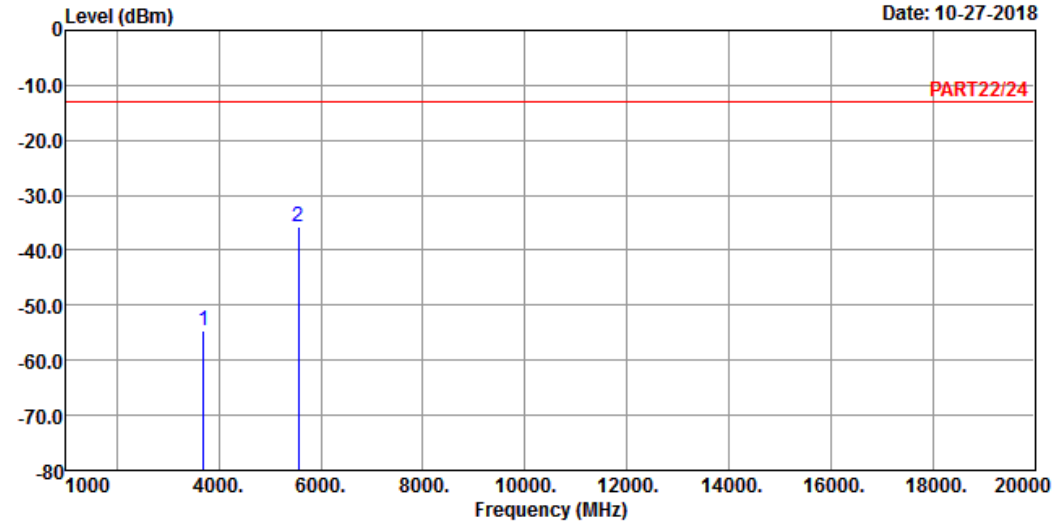
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : EDGE 1900 Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3700.40	-51.10	-44.17	-13.00	-38.10	-6.93	Peak
2 pp	5550.60	-30.06	-28.16	-13.00	-17.06	-1.90	Peak

Data: 2

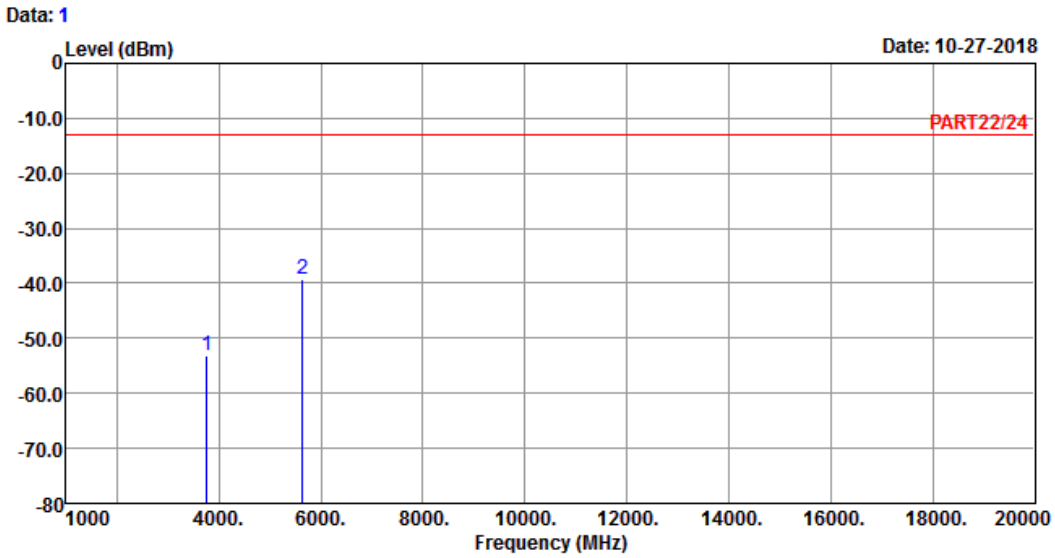


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : EDGE 1900 Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3700.40	-54.69	-47.76	-13.00	-41.69	-6.93	Peak
2 pp	5550.60	-35.64	-33.74	-13.00	-22.64	-1.90	Peak

Middle Channel

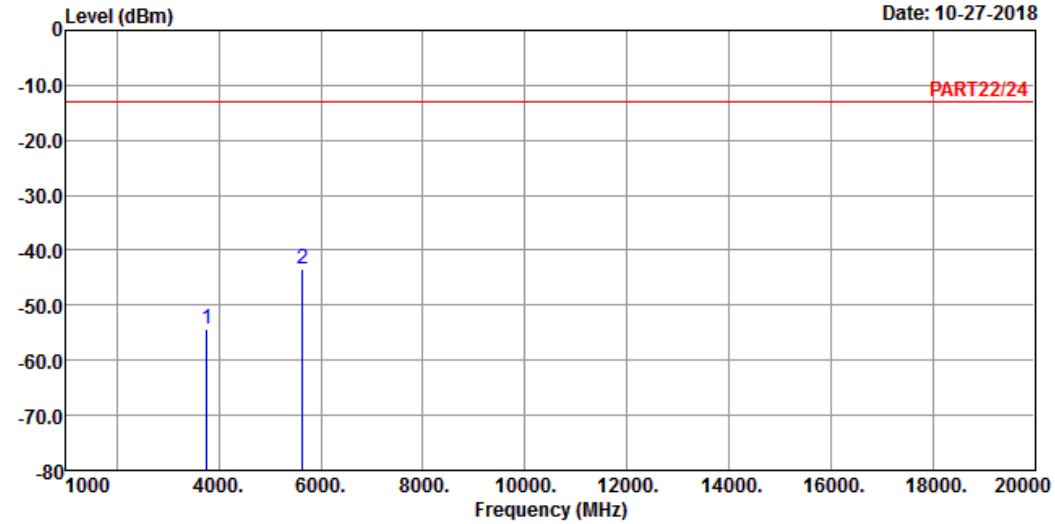
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : EDGE 1900 Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-53.10	-46.45	-13.00	-40.10	-6.65	Peak
2 pp	5640.00	-39.21	-37.35	-13.00	-26.21	-1.86	Peak

Data: 2

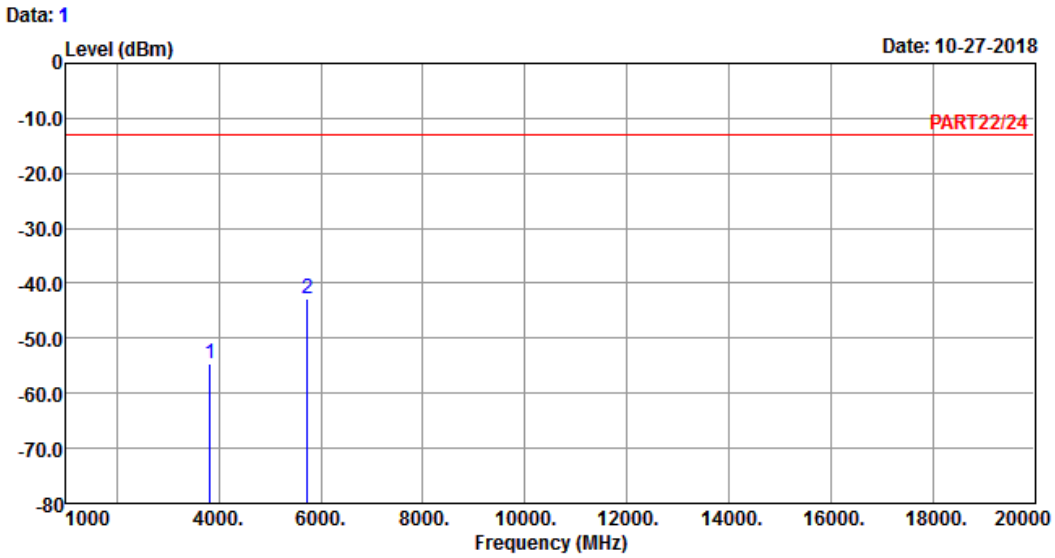


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : EDGE 1900 Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3760.00	-54.43	-47.78	-13.00	-41.43	-6.65	Peak
2 pp	5640.00	-43.52	-41.66	-13.00	-30.52	-1.86	Peak

High Channel

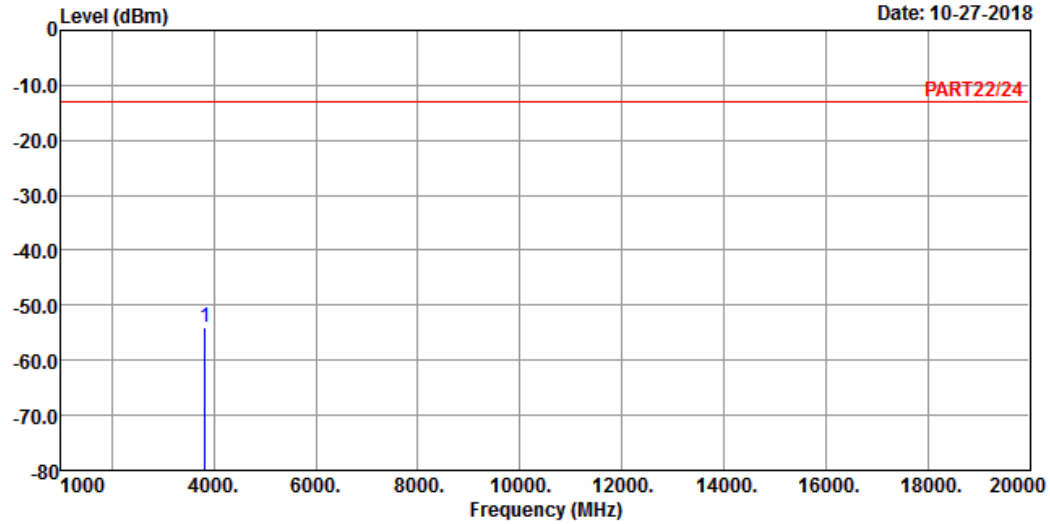
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : EDGE 1900 Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3819.60	-54.71	-48.31	-13.00	-41.71	-6.40	Peak
2 pp	5729.40	-42.80	-41.15	-13.00	-29.80	-1.65	Peak

Data: 2



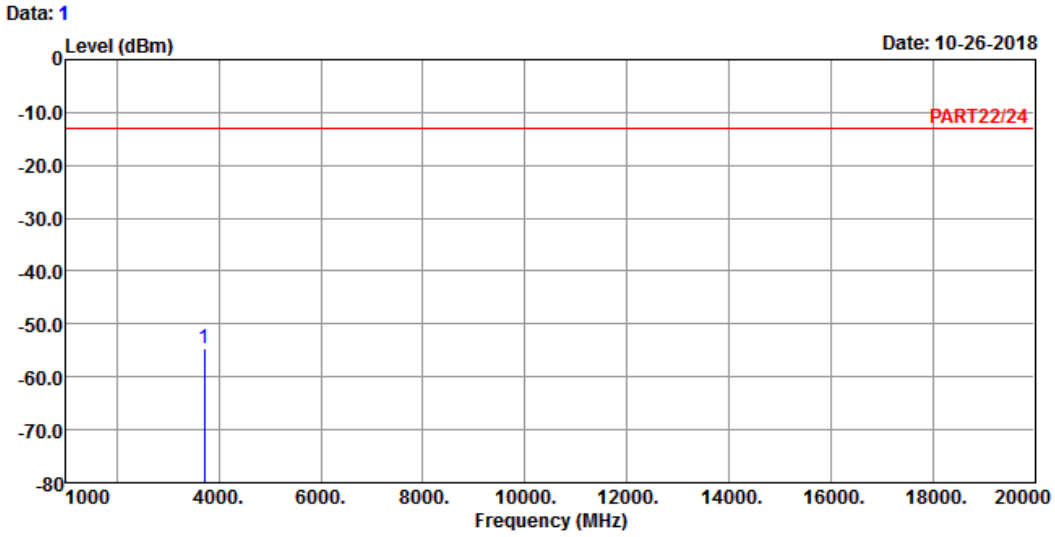
Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : EDGE 1900 Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3819.60	-53.95	-47.55	-13.00	-40.95	-6.40	Peak

WCDMA:

Low Channel

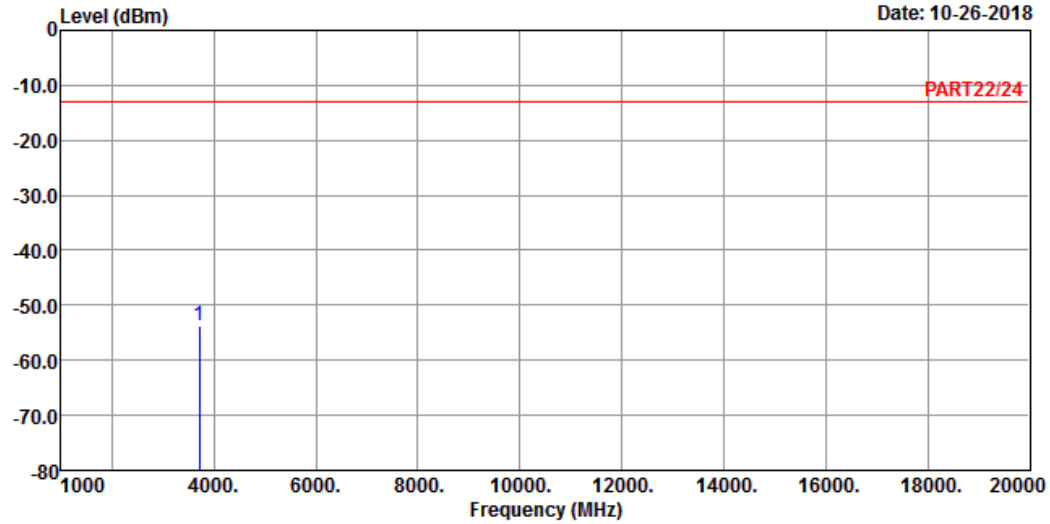
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : WCDMA Band 2 Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3704.80	-54.74	-47.81	-13.00	-41.74	-6.93	Peak

Data: 2

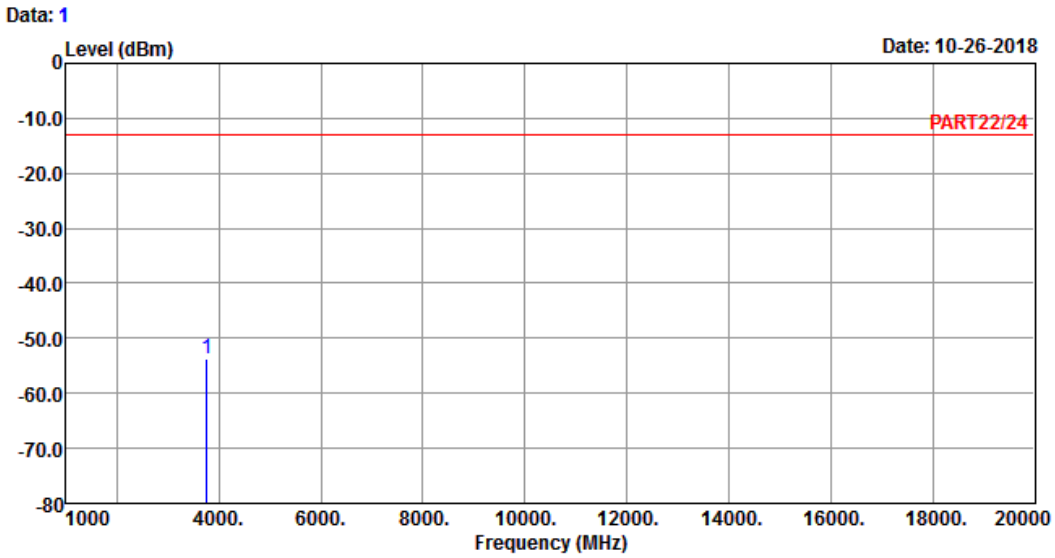


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : WCDMA Band 2 Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3704.80	-53.75	-46.82	-13.00	-40.75	-6.93	Peak

Middle Channel

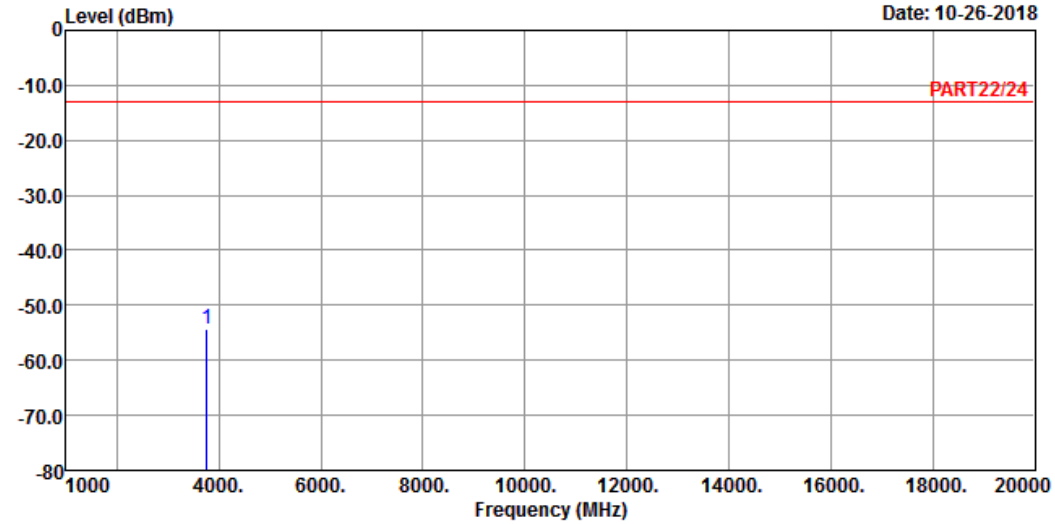
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : WCDMA Band 2 Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3760.00	-53.67	-47.02	-13.00	-40.67	-6.65	Peak

Data: 2

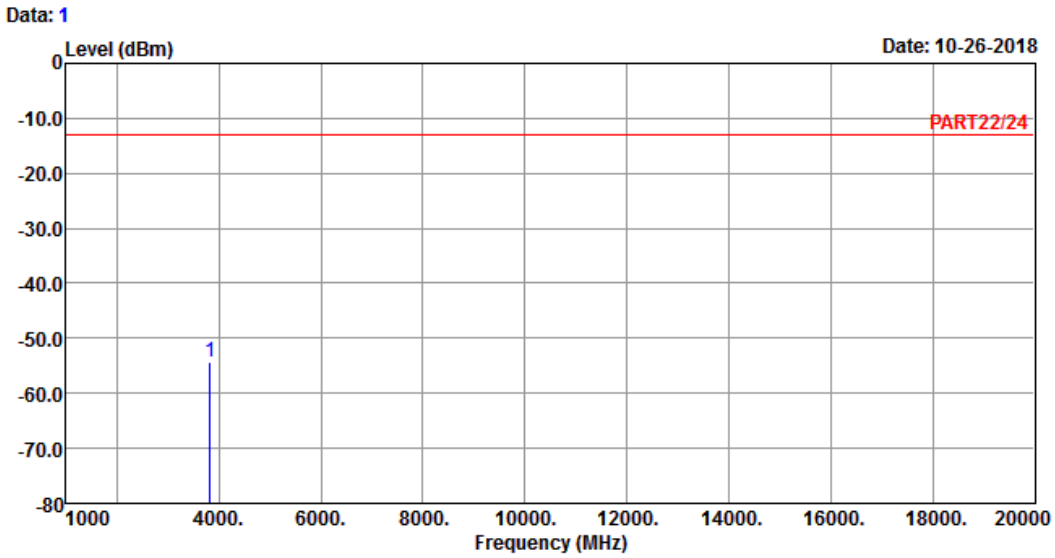


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : WCDMA Band 2 Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3760.00	-54.27	-47.62	-13.00	-41.27	-6.65	Peak

High Channel

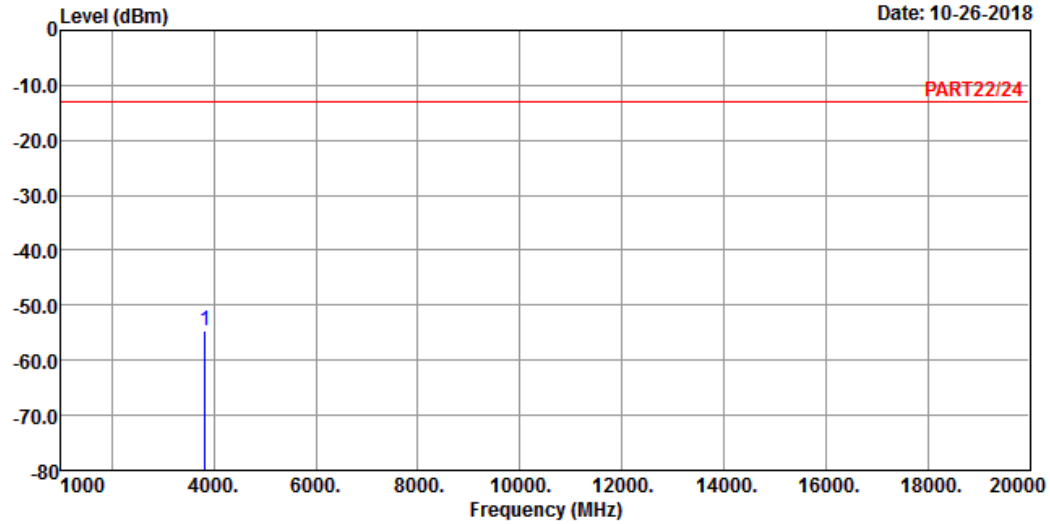
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remark : WCDMA Band 2 Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3815.20	-54.24	-47.84	-13.00	-41.24	-6.40	Peak

Data: 2

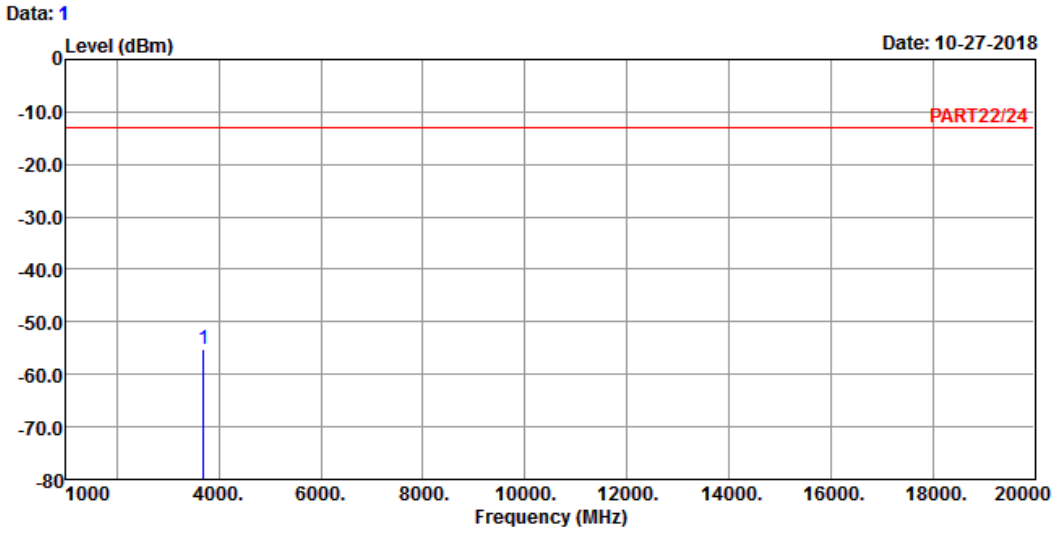


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remark : WCDMA Band 2 Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3815.20	-54.47	-48.07	-13.00	-41.47	-6.40	Peak

LTE Band 2
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

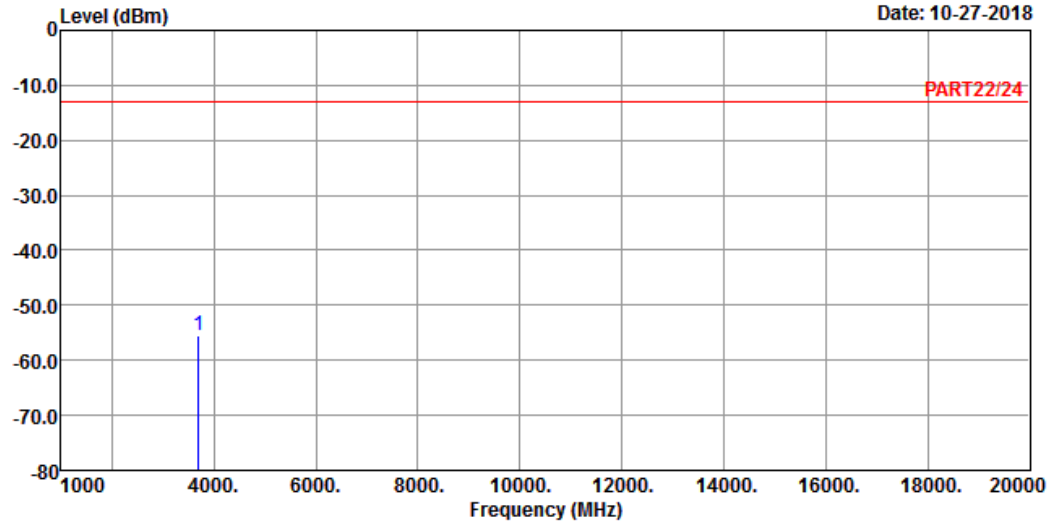
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_1.4M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3701.40	-55.21	-48.28	-13.00	-42.21	-6.93	Peak

Data: 2

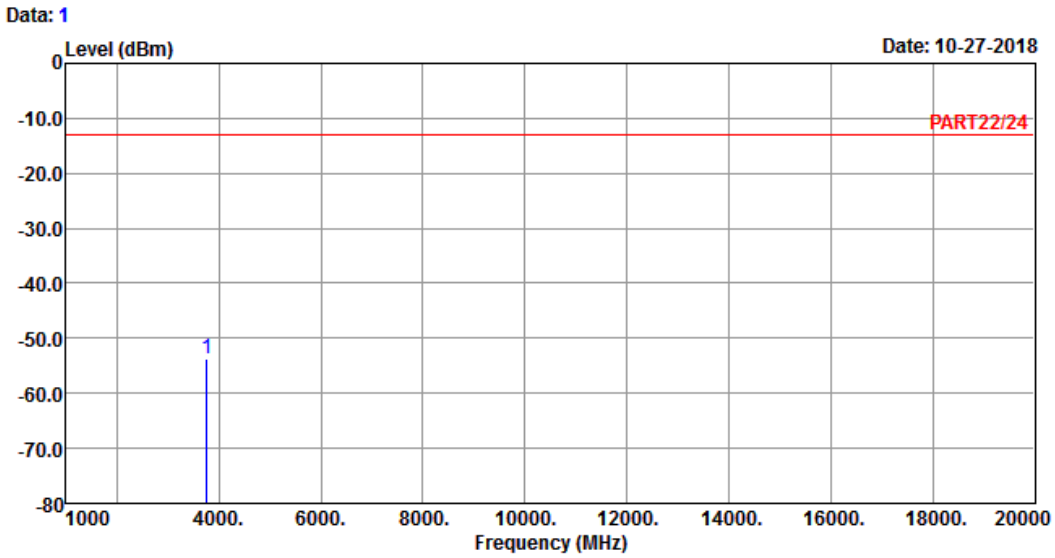


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_1.4M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3701.40	-55.38	-48.45	-13.00	-42.38	-6.93	Peak

Middle Channel

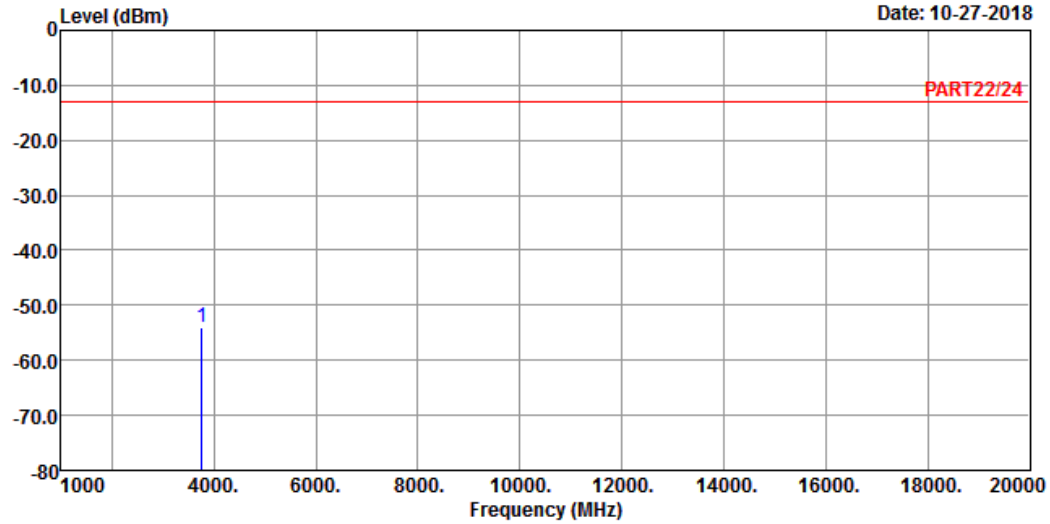
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_1.4M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3760.00	-53.75	-47.10	-13.00	-40.75	-6.65	Peak

Data: 2

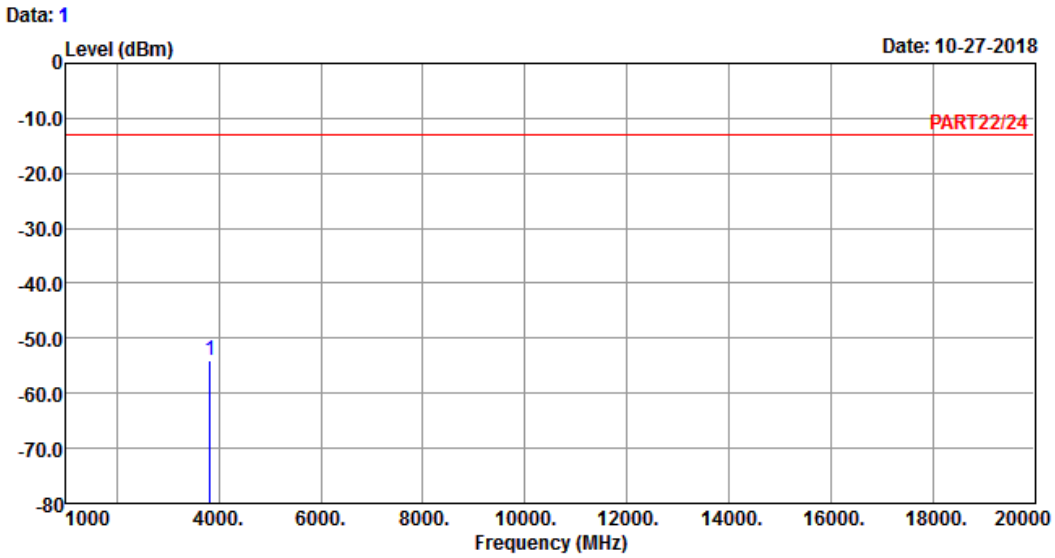


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_1.4M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3760.00	-54.08	-47.43	-13.00	-41.08	-6.65	Peak

High Channel

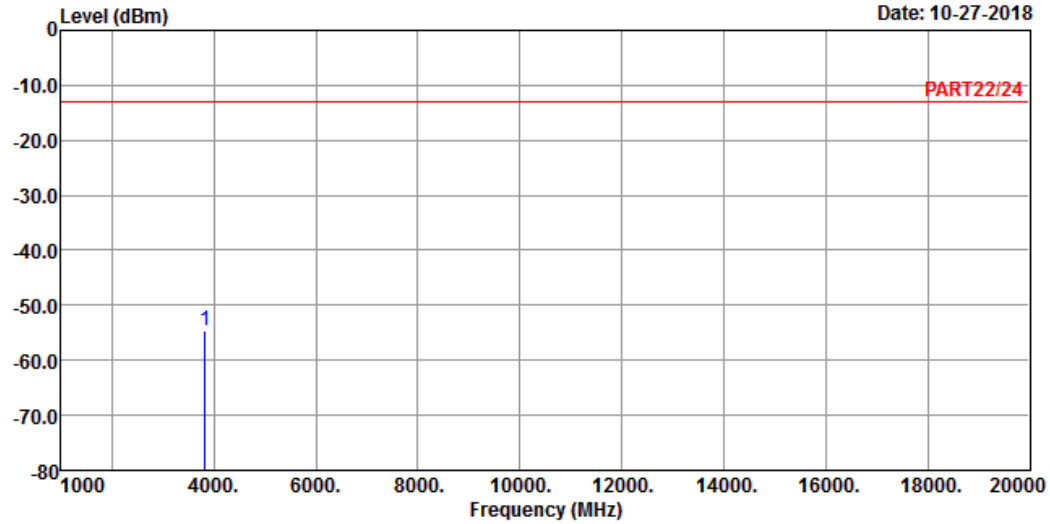
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_1.4M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3818.60	-54.16	-47.76	-13.00	-41.16	-6.40	Peak

Data: 2

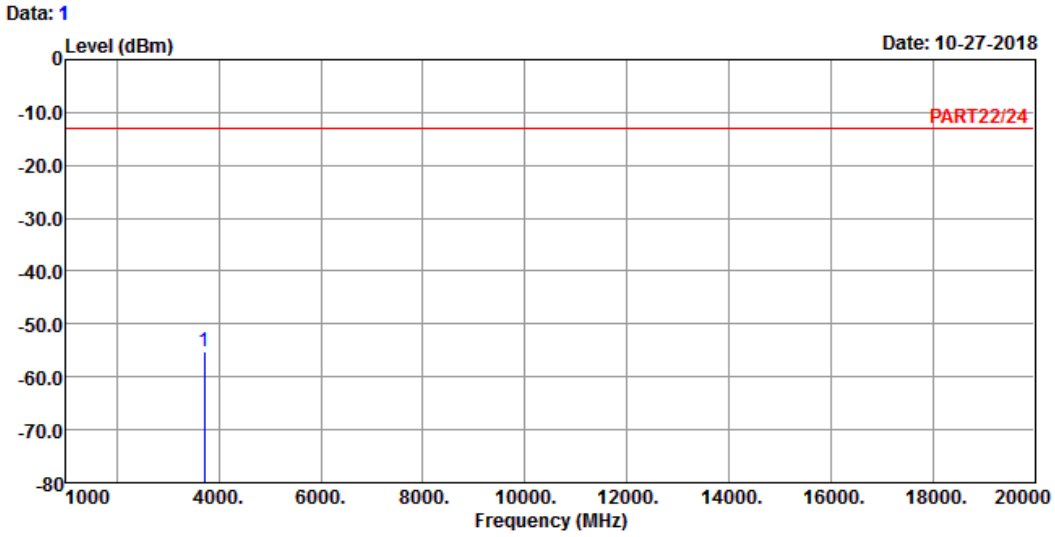


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_1.4M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3818.60	-54.59	-48.19	-13.00	-41.59	-6.40	Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

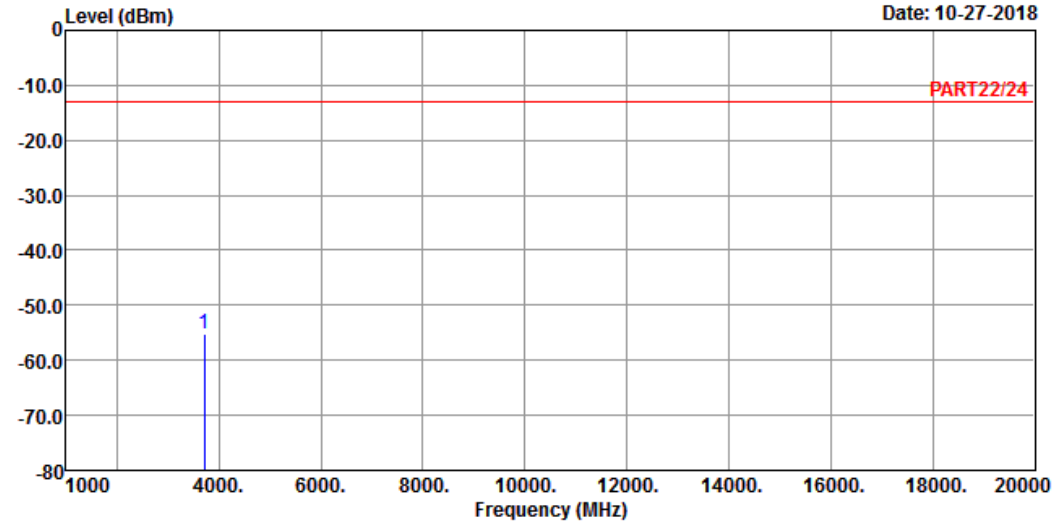
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_5M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3705.00	-55.11	-48.18	-13.00	-42.11	-6.93	Peak

Data: 2

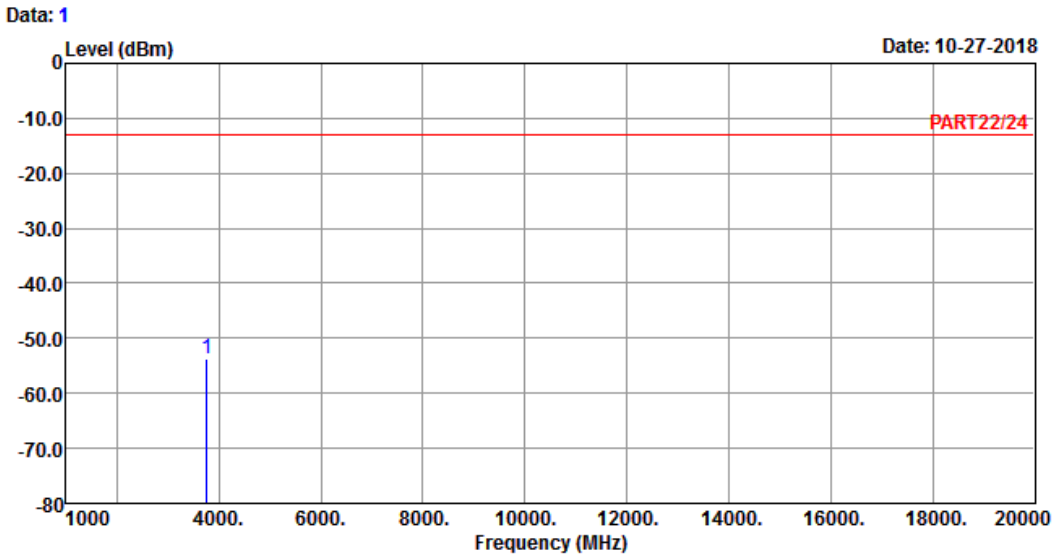


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_5M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3705.00	-55.31	-48.38	-13.00	-42.31	-6.93	Peak

Middle Channel

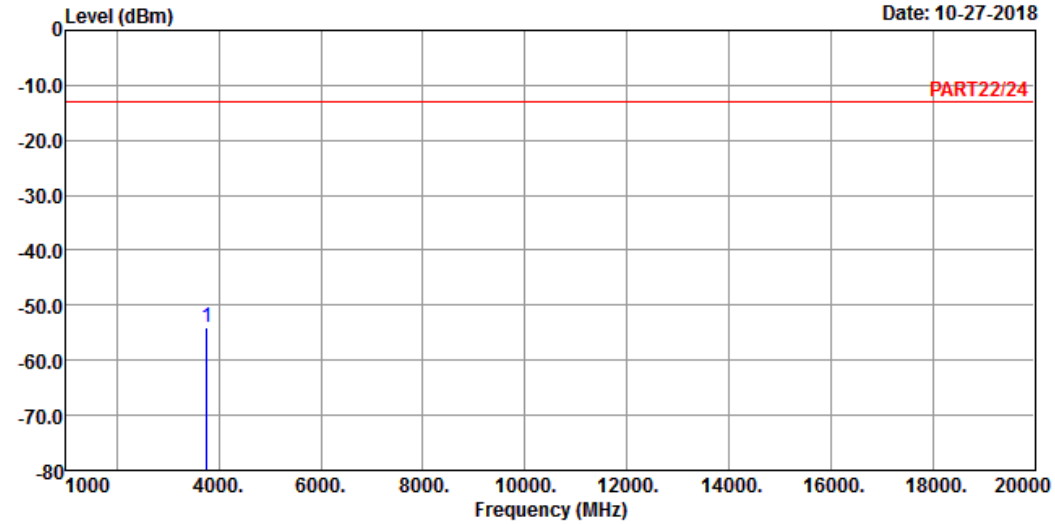
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_5M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3760.00	-53.72	-47.07	-13.00	-40.72	-6.65	Peak

Data: 2

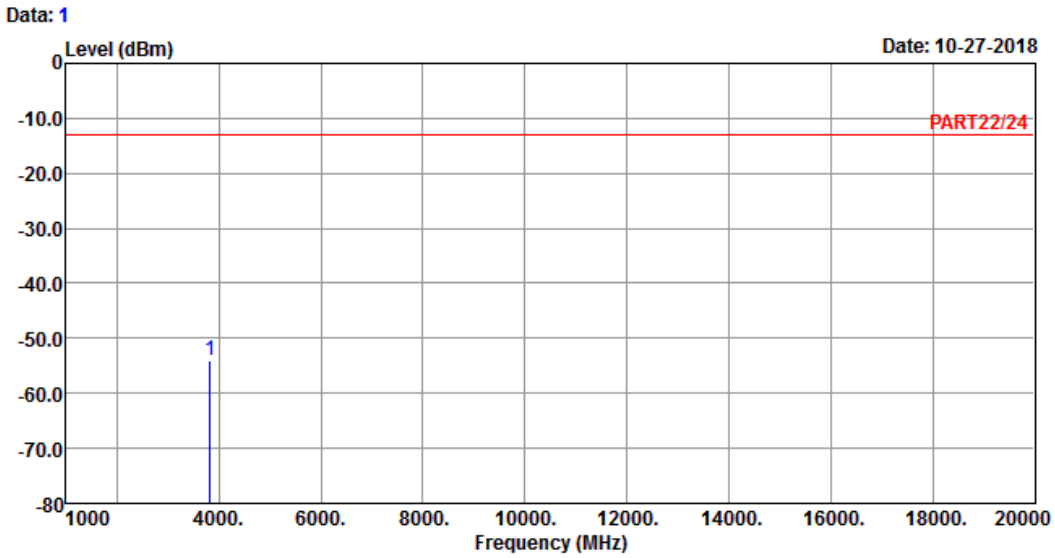


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_5M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3760.00	-54.08	-47.43	-13.00	-41.08	-6.65	Peak

High Channel

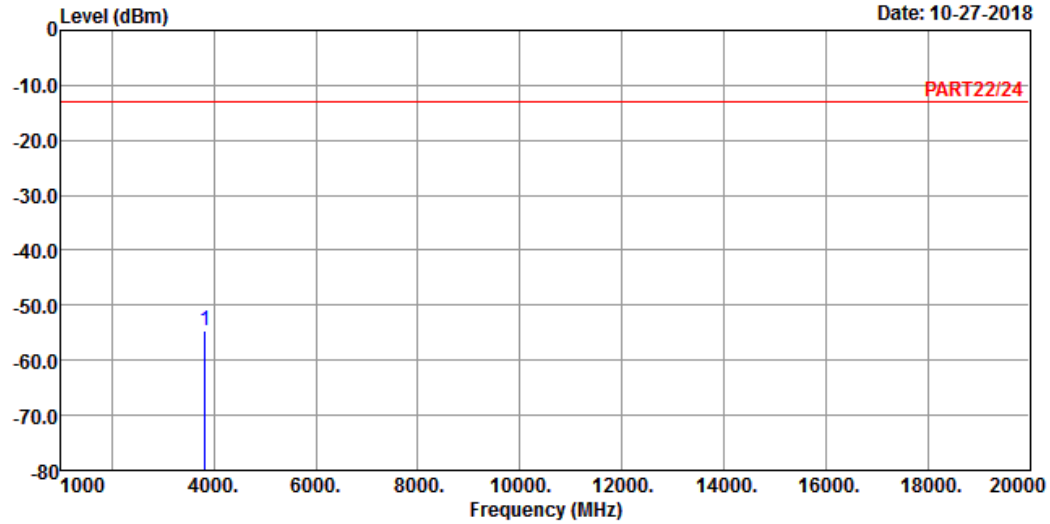
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_5M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3815.00	-54.04	-47.64	-13.00	-41.04	-6.40	Peak

Data: 2

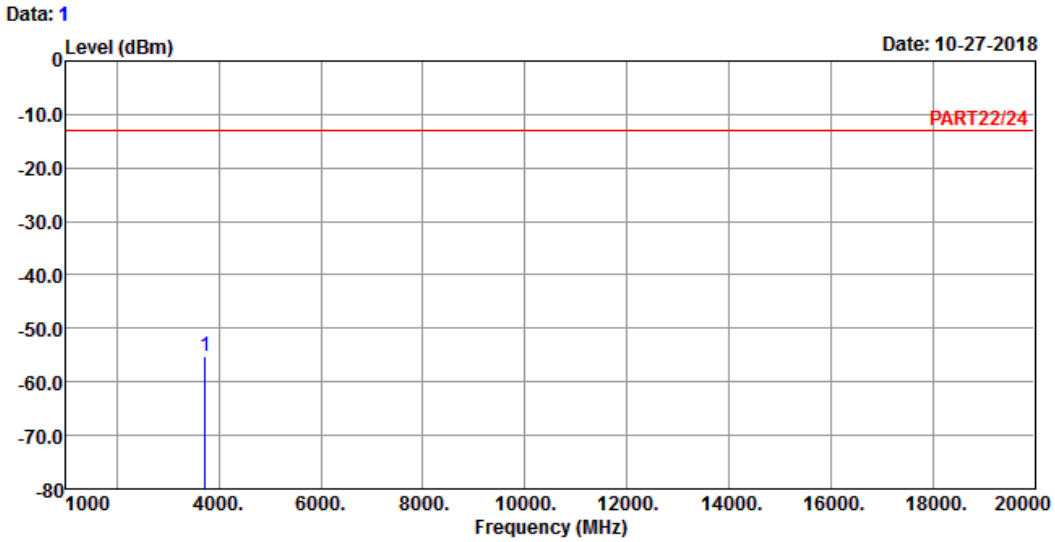


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_5M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3815.00	-54.52	-48.12	-13.00	-41.52	-6.40	Peak

Channel Bandwidth: 20 MHz / QPSK
Low Channel

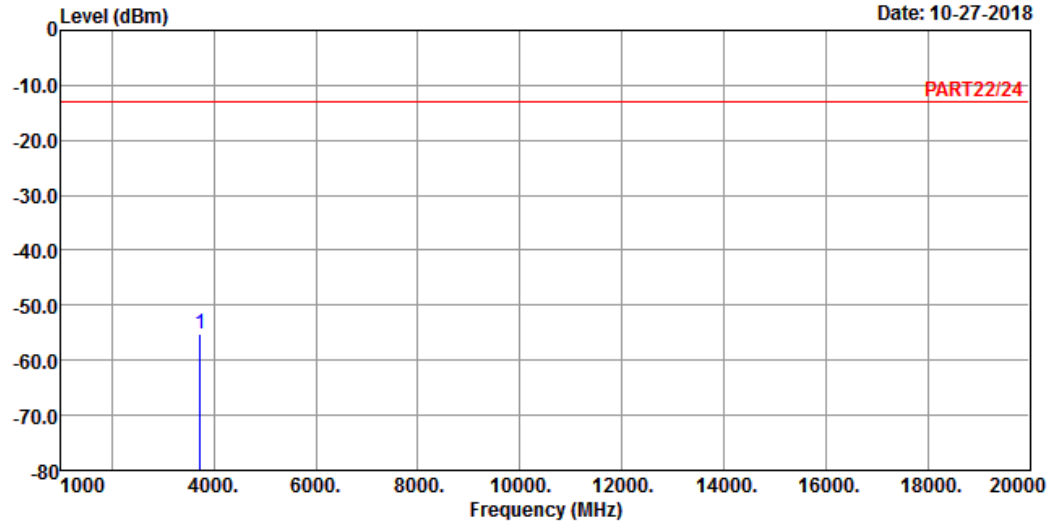
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_20M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3720.00	-55.07	-48.25	-13.00	-42.07	-6.82	Peak

Data: 2

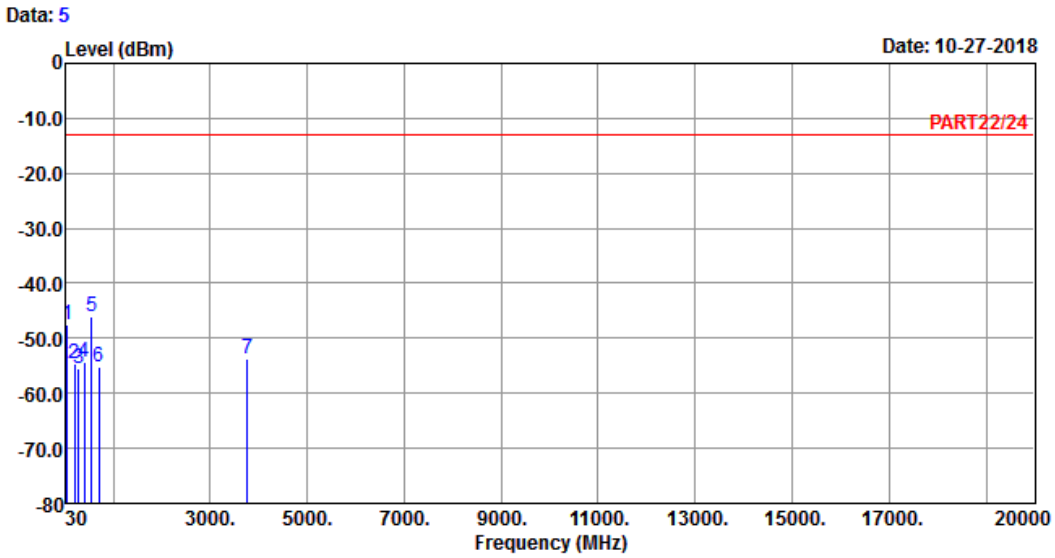


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_20M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3720.00	-55.24	-48.42	-13.00	-42.24	-6.82	Peak

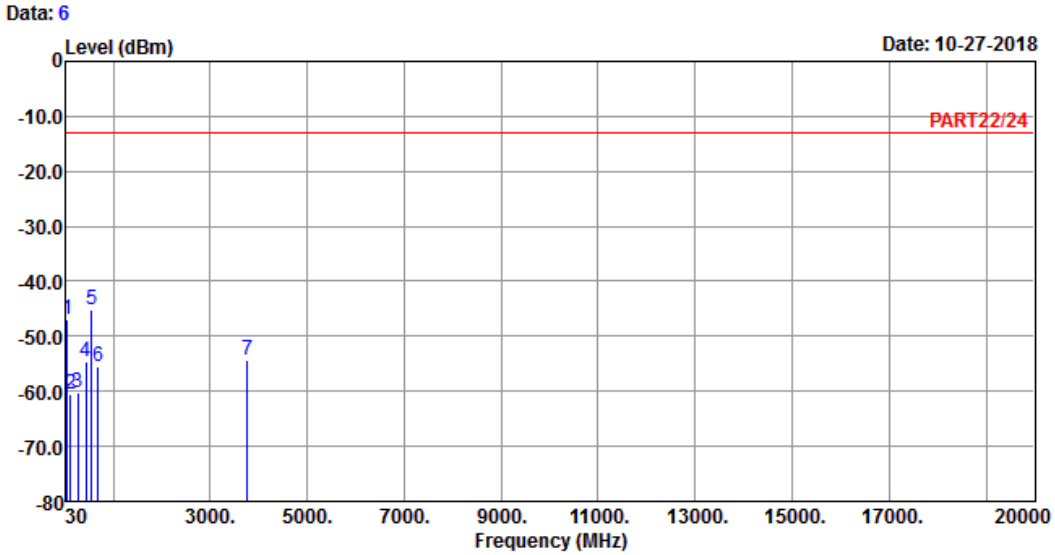
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_20M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-47.65	-46.18	-13.00	-34.65	-1.47	Peak
2	208.79	-54.59	-46.92	-13.00	-41.59	-7.67	Peak
3	284.55	-55.38	-48.69	-13.00	-42.38	-6.69	Peak
4	401.51	-54.22	-48.29	-13.00	-41.22	-5.93	Peak
5 pp	547.98	-45.94	-43.02	-13.00	-32.94	-2.92	Peak
6	700.27	-55.12	-55.02	-13.00	-42.12	-0.10	Peak
7	3760.00	-53.65	-47.00	-13.00	-40.65	-6.65	Peak

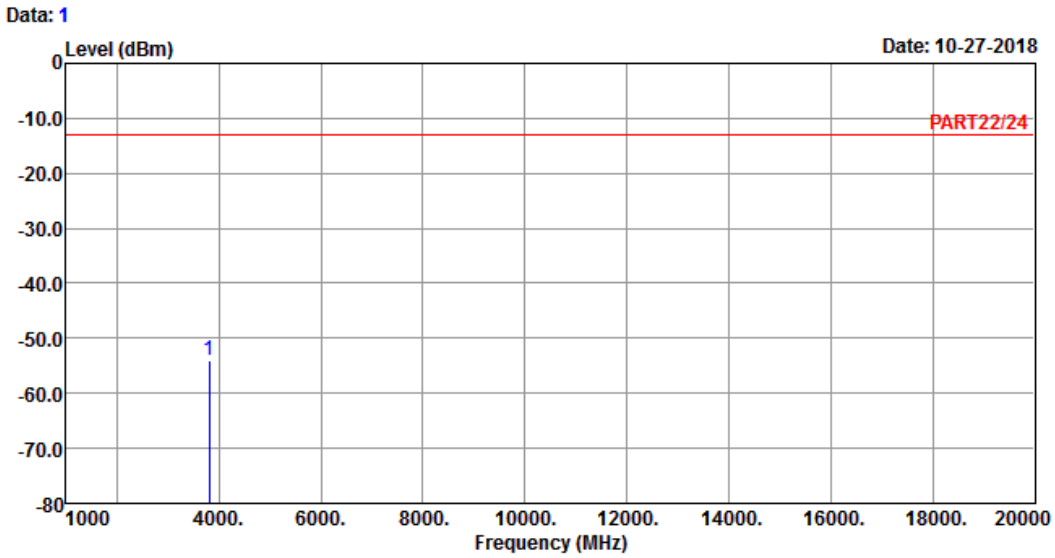


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_20M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	44.55	-47.03	-45.04	-13.00	-34.03	-1.99	Peak
2	112.27	-60.55	-50.35	-13.00	-47.55	-10.20	Peak
3	269.59	-60.26	-53.87	-13.00	-47.26	-6.39	Peak
4	444.19	-54.53	-48.93	-13.00	-41.53	-5.60	Peak
5 pp	558.65	-45.12	-42.63	-13.00	-32.12	-2.49	Peak
6	695.42	-55.63	-55.46	-13.00	-42.63	-0.17	Peak
7	3760.00	-54.17	-47.52	-13.00	-41.17	-6.65	Peak

High Channel

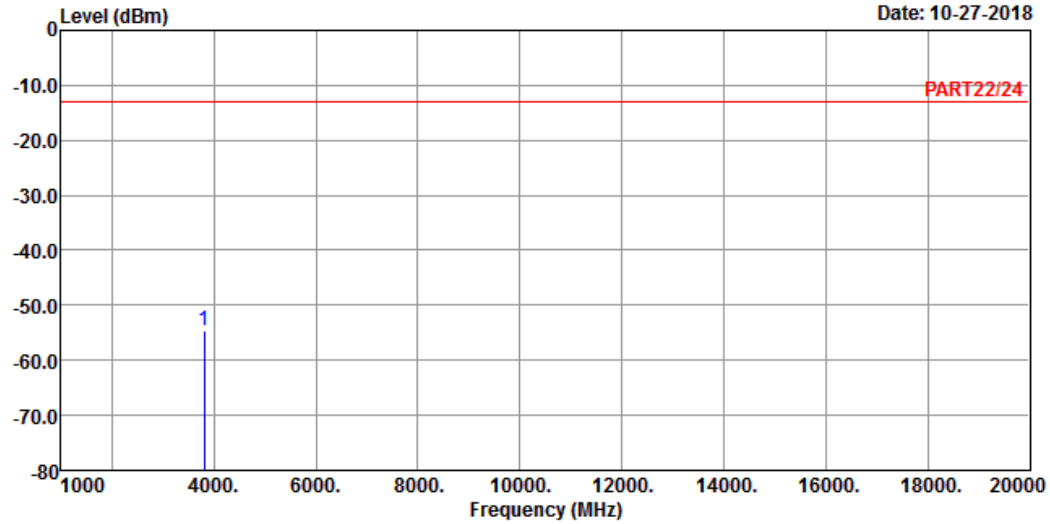
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 2 QPSK_20M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3800.00	-53.99	-47.56	-13.00	-40.99	-6.43	Peak

Data: 2



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 2 QPSK_20M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3800.00	-54.47	-48.04	-13.00	-41.47	-6.43	Peak

5 Pictures of Test Arrangements

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

Appendix – Information on 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.

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

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety
Tel: 886-3-3183232
Fax: 886-3-3270892

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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