



FCC TEST REPORT (PART 27)

REPORT NO.: RF110805C09-4

MODEL NO.: PI86100

FCC ID: NM8PI86100

RECEIVED: Aug. 05, 2011

TESTED: Sep. 24 ~ Oct. 05, 2011

ISSUED: Oct. 07, 2011

APPLICANT: HTC Corporation

ADDRESS: 23, Xinghua Rd., Taoyuan 330, Taiwan, R.O.C.

ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,
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TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Oct. 07, 2011



1 CERTIFICATION

PRODUCT: Windows Phone
MODEL: PI86100
BRAND: HTC
APPLICANT: HTC Corporation
TEST SAMPLE: Production Unit
TESTED: Sep. 24 ~ Oct. 05, 2011
TEST STANDARDS : **FCC Part 27**
FCC Part 2
ANSI C63.4-2003

The above equipment (model: PI86100) 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 EMC characteristics under the conditions specified in this report.

PREPARED BY : Andrea Hsia , DATE : Oct. 07, 2011
Andrea Hsia / Specialist

APPROVED BY : Gary Chang , DATE : Oct. 07, 2011
Gary Chang / Technical Manager

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

OPERATING BAND: 704~716 MHz			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 27.50(C)(10)	Maximum Peak Output Power Limit: max. 3 watts e.r.p peak power	PASS	Meet the requirement of limit. Minimum passing margin is 18.5dBm at 713.5MHz.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(g)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to average ratio	PASS	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(g)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(g)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -29.6dB at 127.19MHz.

OPERATING BAND: 1710~1755 MHz			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 27.50(d)(4)	Maximum Peak Output Power Limit: max. 1 watts e.i.r.p peak power	PASS	Meet the requirement of limit. Minimum passing margin is 24.4dBm at 1752.3MHz.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(h)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to average ratio	PASS	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(h)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(h)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -23.2dB at 6841.44MHz.

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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Windows Phone	
MODEL NO.	PI86100	
FCC ID	NM8PI86100	
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (battery)	
MODULATION TECHNOLOGY	LTE Band 17	QPSK, 16QAM
	LTE Band 4	QPSK, 16QAM
FREQUENCY RANGE	LTE Band 17 Channel Bandwidth: 5MHz	706.5MHz ~ 713.5MHz
	LTE Band 17 Channel Bandwidth: 10MHz	709MHz ~ 711MHz
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~1752.5MHz
	LTE Band 4 Channel Bandwidth: 10MHz	1715.0MHz ~1750.0MHz
MAX. ERP POWER (W)	LTE Band 17	0.0708W
MAX. EIRP POWER (W)	LTE Band 4	0.2754W
CATEGORY	LTE: 3	
ANTENNA TYPE	Fixed antenna	
I/O PORTS	Refer to users' manual	
DATA CABLE	Refer to Note as below	
ACCESSORY DEVICES	Refer to Note as below	

NOTE:

- The EUT's accessories list refers to Ext Pho_NM8PI86100.pdf.
*Main sample & 2nd sample + item 2, 3, 6 were for the final test.
- The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

LTE Band 17: 704MHz ~ 716MHz

Three channels had been tested for each channel bandwidth.

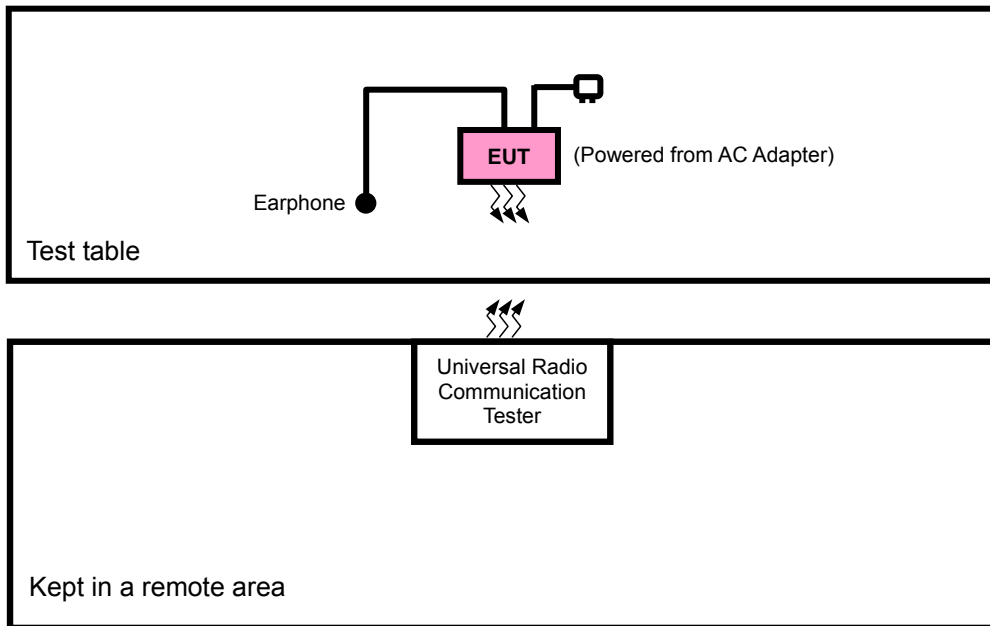
CHANNEL BANDWIDTH	5MHz		10MHz	
	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Low channel (L)	23755	706.5	23780	709.0
Middle channel (M)	23790	710.0	23790	710.0
High channel (H)	23825	713.5	23800	711.0

LTE Band 4: 1710MHz ~ 1755MHz

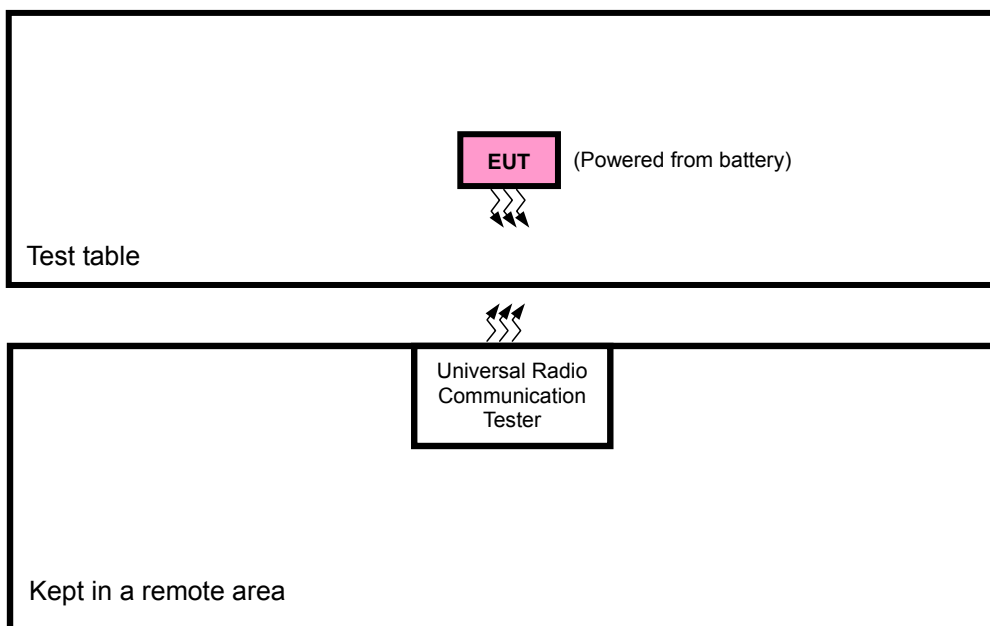
Three channels had been tested for each channel bandwidth.

CHANNEL BANDWIDTH	5MHz		10MHz	
	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Low channel (L)	19975	1712.5	20000	1715.0
Middle channel (M)	20175	1732.5	20175	1732.5
High channel (H)	20375	1752.5	20350	1750.0

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST



FOR E.I.R.P. TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO								DESCRIPTION
	OP	FS	OB	PA	BE	CE	RE<1G	RE≥1G	
A	V	V	V	V	V	V	V	V	Main sample + Power from adapter 2
B	V	-	-	-	-	-	V	V	2nd sample + Power from adapter 2

Where **OP**: Output power
OB: Occupied bandwidth
BE: Band edge
RE<1G: Radiated emission below 1GHz
FS: Frequency stability
PA: Peak to Average Ratio
CE: Conducted spurious emissions
RE≥1G: Radiated emission above 1GHz

OUTPUT POWER MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH	AXIS
A	LTE Band 17	23755 to 23825	23755, 23790, 23825	QPSK, 16QAM	5MHz	Z
A		23780 to 23800	23780, 23790, 23800	QPSK, 16QAM	10MHz	Z
B		23755 to 23825	23755, 23790, 23825	QPSK, 16QAM	5MHz	Z
A	LTE Band 4	19975 to 20375	19975, 20175, 20375	QPSK, 16QAM	5MHz	Z
A		20000 to 20350	20000, 20175, 20350	QPSK, 16QAM	10MHz	Z
B		19975 to 20375	19975, 20175, 20375	QPSK, 16QAM	5MHz	Z

FREQUENCY STABILITY MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH
A	LTE Band 17	23755 to 23825	23790	QPSK	5MHz
A	LTE Band 17	23780 to 23800	23790	QPSK	10MHz
A	LTE Band 4	19975 to 20375	20175	QPSK	5MHz
A	LTE Band 4	20000 to 20350	20175	QPSK	10MHz

OCCUPIED BANDWIDTH MEASUREMENT:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH
A	LTE Band 17	23755 to 23825	23755, 23790, 23825	QPSK, 16QAM	5MHz
A		23780 to 23800	23780, 23790, 23800	QPSK, 16QAM	10MHz
A	LTE Band 4	19975 to 20375	19975, 20175, 20375	QPSK, 16QAM	5MHz
A		20000 to 20350	20000, 20175, 20350	QPSK, 16QAM	10MHz

PEAK TO AVERAGE RATIO:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH
A	LTE Band 17	23755 to 23825	23755, 23790, 23825	QPSK, 16QAM	5MHz
A		23780 to 23800	23780, 23790, 23800	QPSK, 16QAM	10MHz
A	LTE Band 4	19975 to 20375	19975, 20175, 20375	QPSK, 16QAM	5MHz
A		20000 to 20350	20000, 20175, 20350	QPSK, 16QAM	10MHz

BAND EDGE MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH
A	LTE Band 17	23755 to 23825	23755, 23825	QPSK	5MHz
A		23780 to 23800	23780, 23800	QPSK	10MHz
A	LTE Band 4	19975 to 20375	19975, 20375	QPSK	5MHz
A		20000 to 20350	20000, 20350	QPSK	10MHz

CONDUCTED SPURIOUS EMISSIONS MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH
A	LTE Band 17	23755 to 23825	23755, 23790, 23825	QPSK	5MHz
A		23780 to 23800	23780, 23790, 23800	QPSK	10MHz
A	LTE Band 4	19975 to 20375	19975, 20175, 20375	QPSK	5MHz
A		20000 to 20350	20000, 20175, 20350	QPSK	10MHz

RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH	AXIS
A	LTE Band 17	23755 to 23825	23790	QPSK	5MHz	Z
A		23780 to 23800	23790	QPSK	10MHz	Z
B		23755 to 23825	23790	QPSK	5MHz	Z
A	LTE Band 4	19975 to 20375	19975	QPSK	5MHz	Z
A		20000 to 20350	19975	QPSK	10MHz	Z
B		19975 to 20375	20000	QPSK	5MHz	Z

RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	OPERATING BAND	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	CHANNEL BANDWIDTH	AXIS
A	LTE Band 17	23755 to 23825	23755, 23790	QPSK, 16QAM	5MHz	Z
A		23780 to 23800	23780, 23790, 23800	QPSK, 16QAM	10MHz	Z
B		23755 to 23825	23790	QPSK	5MHz	Z
A	LTE Band 4	19975 to 20375	19975, 20375	QPSK, 16QAM	5MHz	Z
A		20000 to 20350	20000, 20350	QPSK, 16QAM	10MHz	Z
B		19975 to 20375	19975	QPSK	5MHz	Z

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
OP	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao
FS	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao
OB	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao
PA	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao
BE	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao
CE	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao
RE < 1G	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao
RE ≥ 1G	26deg. C, 65%RH	120Vac, 60Hz	Mark Liao

3.3 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 27

ANSI C63.4-2003

ANSI/TIA/EIA-603-C 2004

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	EARPHONE	HTC	HS G400	NA	NA
2	UNIVERSAL RADIO COMMUNICATION TESTER	Anritsu	MT8820C	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.2m non-shielded cable without core
2	NA

NOTE:

1. All power cords of the above support units are non shielded (1.8m).
2. Item 2 acted as a communication partners to transfer data.
3. Item 2 was for WCDMA AWS Band test only.
4. Item 3 was for LTE Band 17 & LTE Band 4 test only.

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

Portable stations (hand-held devices) operating in the 698–746 MHz band are limited to 3 watts ERP

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 02, 2011	Aug. 01, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP 40	100041	Jul. 21, 2011	Jul. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 13, 2011	Apr. 12, 2012
HORN Antenna SCHWARZBECK	9120D	209	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8447D	2944A10633	Nov. 02, 2010	Nov. 01, 2011
Preamplifier Agilent	8449B	3008A01964	Nov. 02, 2010	Nov. 01, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295014/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	Aug. 19, 2011	Aug. 18, 2012
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 3.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 988962.
 5. The IC Site Registration No. is IC 7450F-3.

4.1.3 TEST PROCEDURES

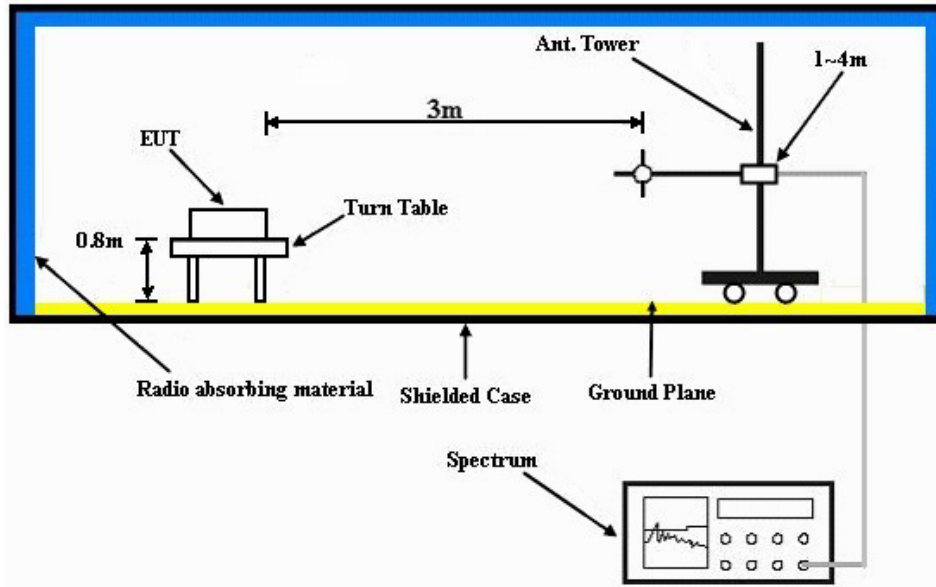
EIRP / ERP MEASUREMENT:

- a. The EUT was set up for the maximum power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at specific channel. RWB and VBW are 5MHz & 10MHz for LTE.
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- 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 a. Record the power level of S.G
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
- e. $E.R.P = E.I.R.P - 2.15 \text{ dB}$

CONDUCTED POWER MEASUREMENT:

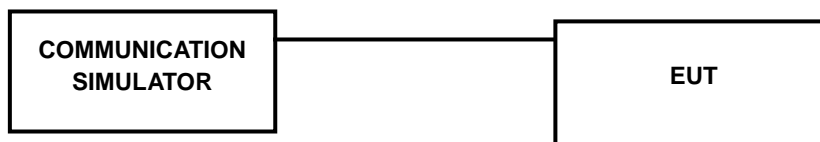
- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.4 TEST SETUP EIRP / ERP MEASUREMENT:



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

CONDUCTED POWER MEASUREMENT:



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

4.1.5 EUT OPERATING CONDITIONS

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

4.1.6 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

LTE Band XVII							
Bandwidth	Modulation	Channel	Frequency (MHz)	1RB Lower Edge	1RB Upper Edge	50%RB Centered	100%RB
5 MHz	QPSK	23755	706.5	23.12	22.85	22.15	22.1
		23790	710.0	23.15	23.03	21.98	21.94
		23825	713.5	23.14	22.98	21.89	21.86
	16QAM	23755	706.5	22.33	22.26	21.1	21.49
		23790	710.0	22.18	22.12	20.89	21.31
		23825	713.5	22.21	22.15	20.79	21.24
10 MHz	QPSK	23780	709.0	23.07	22.74	22.06	21.99
		23790	710.0	22.98	22.86	21.97	21.89
		23800	711.0	22.96	22.85	22.08	22.02
	16QAM	23780	709.0	22.38	22.15	21.32	21.05
		23790	710.0	22.32	22.22	21.45	21.09
		23800	711.0	22.35	22.17	21.36	21.08

LTE Band IV							
Bandwidth	Modulation	Channel	Frequency (MHz)	1RB Lower Edge	1RB Upper Edge	50%RB Centered	100%RB
5 MHz	QPSK	19975	1712.5	23.75	23.65	22.67	22.68
		20175	1732.5	22.93	22.77	21.74	21.82
		20375	1752.5	23.64	23.54	22.56	22.62
	16QAM	19975	1712.5	22.86	22.73	21.63	22.02
		20175	1732.5	21.95	21.82	20.81	21.33
		20375	1752.5	23.12	22.82	21.59	21.92
10 MHz	QPSK	20000	1715.0	23.62	23.38	22.56	22.49
		20175	1732.5	23.05	22.82	21.87	21.8
		20350	1750.0	23.62	23.59	22.68	22.53
	16QAM	20000	1715.0	22.73	22.45	21.62	21.5
		20175	1732.5	22.21	21.94	21.09	20.96
		20350	1750.0	22.62	22.45	22.14	21.62

LTE Band 17:

TEST MODE A

CHANNEL BANDWIDTH: 5MHz

ERP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
23755	706.5	-10.7	30.4	17.5	0.0562
23790	710.0	-10.2	30.4	18.0	0.0631
23825	713.5	-10.0	30.5	18.4	0.0692
ERP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
23755	706.5	-13.6	30.4	14.7	0.0295
23790	710.0	-12.9	30.4	15.3	0.0339
23825	713.5	-13.4	30.3	14.8	0.0302

REMARKS: 1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
 2. Correction Factor (dB) = Free space loss (dB) + Antenna factor (dB) + Cable Loss (dB).

TEST MODE B

CHANNEL BANDWIDTH: 5MHz

ERP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
23755	706.5	-10.2	30.4	18.1	0.0646
23790	710.0	-10.3	30.4	18.0	0.0631
23825	713.5	-9.9	30.5	18.5	0.0708
ERP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
23755	706.5	-11.8	30.4	16.5	0.0447
23790	710.0	-11.8	30.4	16.5	0.0447
23825	713.5	-11.5	30.3	16.7	0.0468

REMARKS: 1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
 2. Correction Factor (dB) = Free space loss (dB) + Antenna factor (dB) + Cable Loss (dB).

LTE Band 4

TEST MODE A

CHANNEL BANDWIDTH: 5MHz

EIRP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
19975	1712.5	-14.5	38.8	24.3	0.2692
20175	1732.5	-13.9	37.7	23.8	0.2399
20375	1752.5	-13.3	37.7	24.4	0.2754
EIRP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
19975	1712.5	-21.5	37.6	16.1	0.0407
20175	1732.5	-22.1	37.5	15.4	0.0347
20375	1752.5	-21.3	37.6	16.3	0.0427

REMARKS: 1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
 2. Correction Factor (dB) = Free space loss (dB) + Antenna factor (dB) + Cable Loss (dB).

TEST MODE B

CHANNEL BANDWIDTH: 5MHz

EIRP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
19975	1712.5	-14.9	38.8	23.9	0.2455
20175	1732.5	-14.1	37.7	23.6	0.2491
20375	1752.5	-13.6	37.7	24.1	0.2570
EIRP POWER (QPSK 1 RB ALLOCATED AT THE LOWER EDGE) (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
19975	1712.5	-21.6	37.6	16.0	0.0398
20175	1732.5	-22.3	37.5	15.2	0.0331
20375	1752.5	-21.5	37.6	16.1	0.0407

REMARKS: 1. Output Power (dBm) = Raw Value (dBm) + Correction Factor (dB).
 2. Correction Factor (dB) = Free space loss (dB) + Antenna factor (dB) + Cable Loss (dB).

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that” The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation. The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with the 2.1055(a)(1) –30 ~50 .

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
* Hewlett Packard RF cable	8120-6192	01428251	NA	NA
* Suhner RF cable	SUCOFLEX 104	257029	Jan. 07, 2011	Jan. 06, 2012
* WIT Standard Temperature & Humidity Chamber	MHU-225AU	920842	Jun. 15, 2011	Jun. 14, 2012

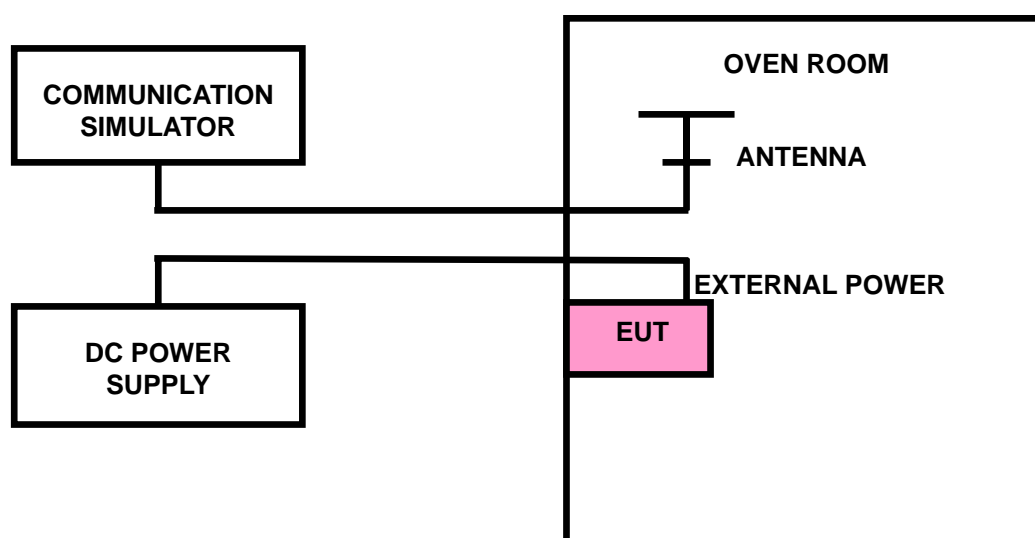
- NOTE:**
1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
 2. “*” = These equipments are used for the final measurement.
 3. The test was performed in ADT RF OVEN room.

4.2.3 TEST PROCEDURE

- a. Because of the measure the carrier frequency under the condition of the AFC lock, it shall be used the mobile station in the LTE link mode. This is accomplished with the use of the communication simulator station. The oven room could control the temperatures and humidity.
- b. Power must be removed when changing from one temperature to another or one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- c. Laptop pc is connected the external power supply to control the DC input power. The various Volts from the minimum 3.6 Volts to 4.2 Volts. Each step shall be record the frequency error rate.
- d. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 during the measurement testing.
- e. 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.

4.2.4 TEST SETUP



4.2.5 TEST RESULTS

AFC FREQUENCY ERROR vs. VOLTAGE					
FREQUENCY ERROR (ppm)					
Band	LTE Band 17		LTE Band 4		LIMIT (ppm)
Channel bandwidth	5MHz	10MHz	5MHz	10MHz	
VOLTAGE (Volts)	Channel 23790	Channel 23790	Channel 20175	Channel 20175	
3.6	-0.007	-0.008	-0.003	-0.003	2.5
3.8	-0.007	-0.007	-0.003	-0.003	2.5
4.2	-0.007	-0.007	-0.003	-0.003	2.5

AFC FREQUENCY ERROR vs. TEMP.					
FREQUENCY ERROR (ppm)					
Band	LTE Band 17		LTE Band 4		LIMIT (ppm)
Channel bandwidth	5MHz	10MHz	5MHz	10MHz	
TEMP. ()	Channel 23790	Channel 23790	Channel 20175	Channel 20175	
50	-0.008	-0.008	-0.004	-0.004	2.5
40	-0.007	-0.007	-0.003	-0.003	2.5
30	-0.006	-0.007	-0.003	-0.003	2.5
20	-0.006	-0.006	-0.002	-0.002	2.5
10	-0.004	-0.005	-0.002	-0.002	2.5
0	-0.004	-0.004	-0.001	-0.001	2.5
-10	-0.003	-0.002	-0.001	-0.001	2.5
-20	-0.004	-0.005	-0.002	-0.002	2.5
-30	-0.004	-0.006	-0.002	-0.001	2.5

4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

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

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
* Mini-Circuits Power Splitter	ZAPD-4	NA	Mar. 24, 2011	Mar. 23, 2012
* Hewlett Packard RF cable	8120-6192	01428251	NA	NA
* JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
* Suhner RF cable	SUCOFLEX 104	257029	Jan. 07, 2011	Jan. 06, 2012
* ROHDE & SCHWARZ Spectrum Analyzer	E4446A	MY44360128	Feb. 22, 2011	Feb. 21, 2012

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

2. "*" = These equipments are used for the final measurement.

4.3.3 TEST SETUP

Same as Item 4.1.4 (Conducted Power Setup)

4.3.4 TEST PROCEDURES

- a. The EUT makes a phone call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels. (low, middle and high operational frequency range.)
- b. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. 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.

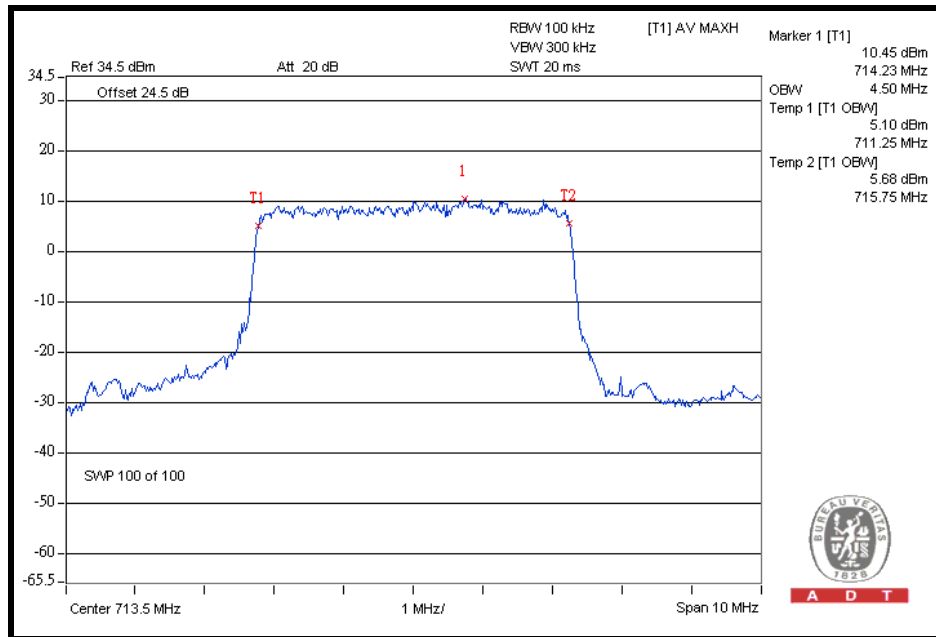
4.3.5 TEST RESULTS

LTE Band 17

CHANNEL BANDWIDTH: 5MHz / QPSK

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
23755	706.5	4.50
23790	710.0	4.48
23825	713.5	4.50

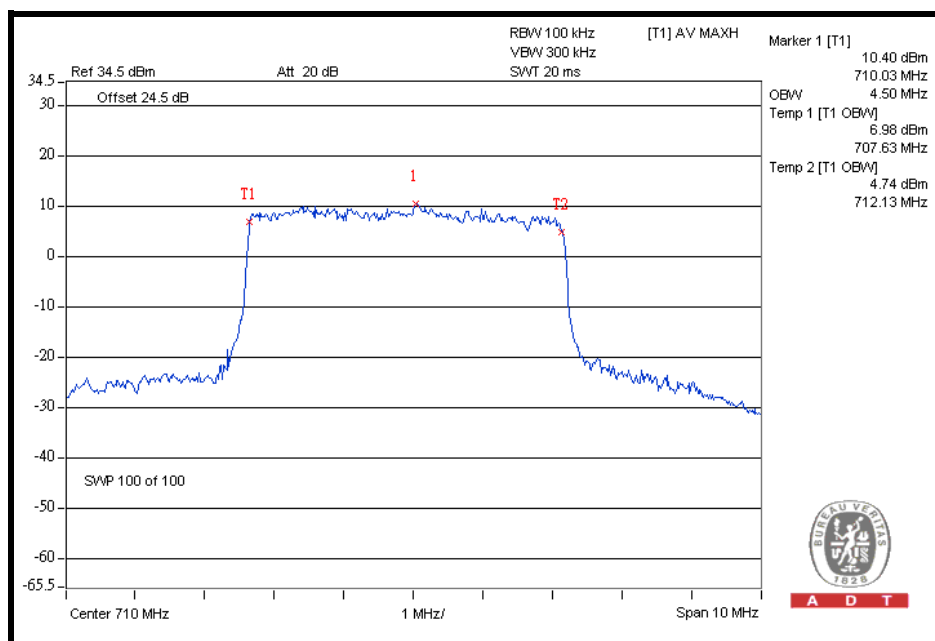
CH 23825



CHANNEL BANDWIDTH: 5MHz / 16QAM

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
23755	706.5	4.50
23790	710.0	4.50
23825	713.5	4.50

CH 23790



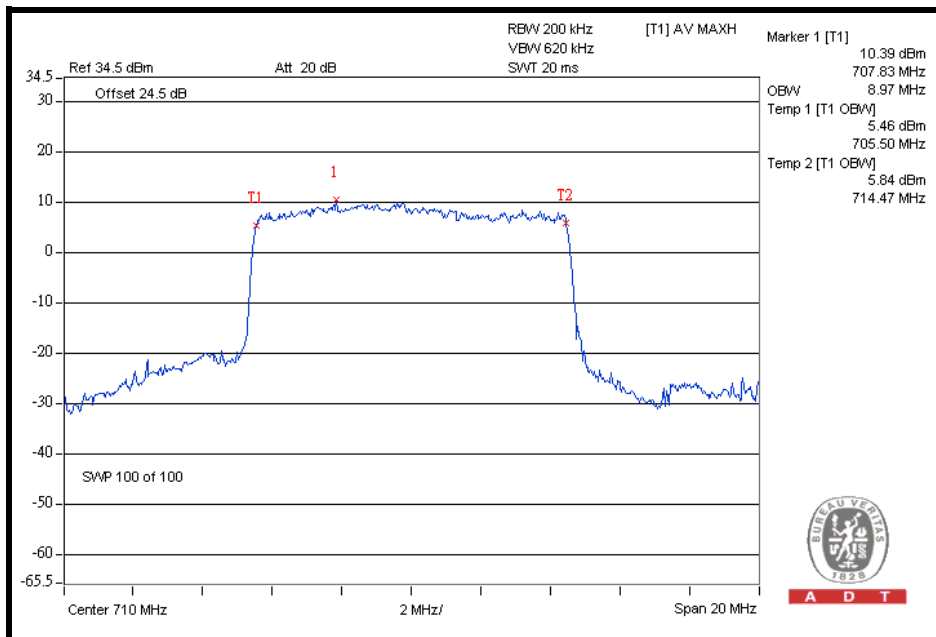


A D T

CHANNEL BANDWIDTH: 10MHz / QPSK

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
23780	709.0	8.97
23790	710.0	8.97
23800	711.0	8.97

CH 23790

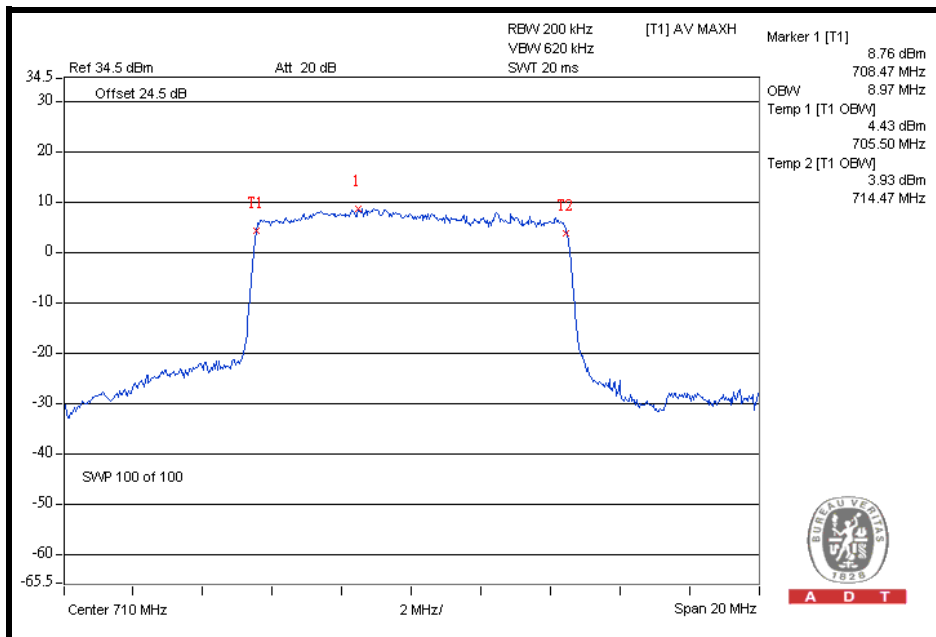


A D T

CHANNEL BANDWIDTH: 10MHz / 16QAM

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
23780	709.0	8.97
23790	710.0	8.97
23800	711.0	8.97

CH 23790

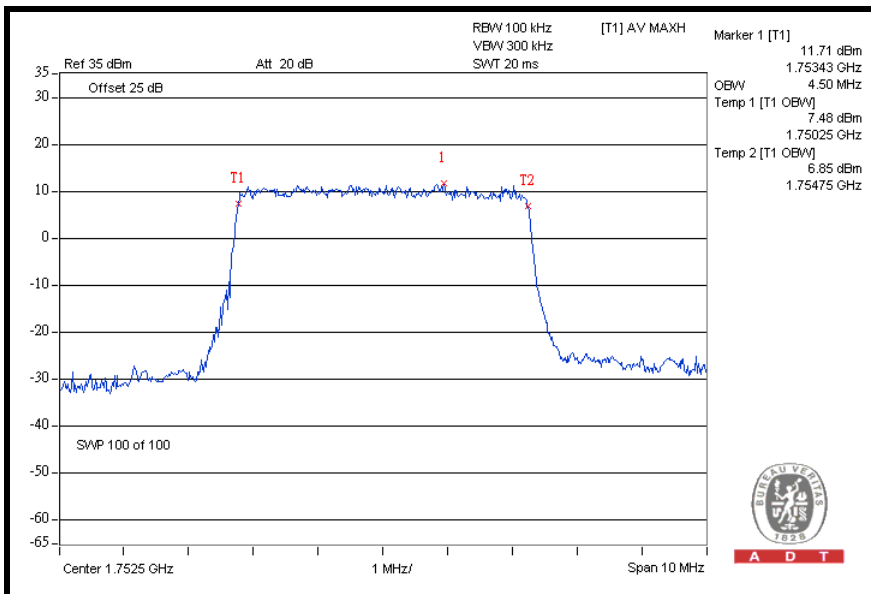


LTE Band 4

CHANNEL BANDWIDTH: 5MHz / QPSK

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
19975	1712.5	4.48
20175	1732.5	4.50
20375	1752.5	4.50

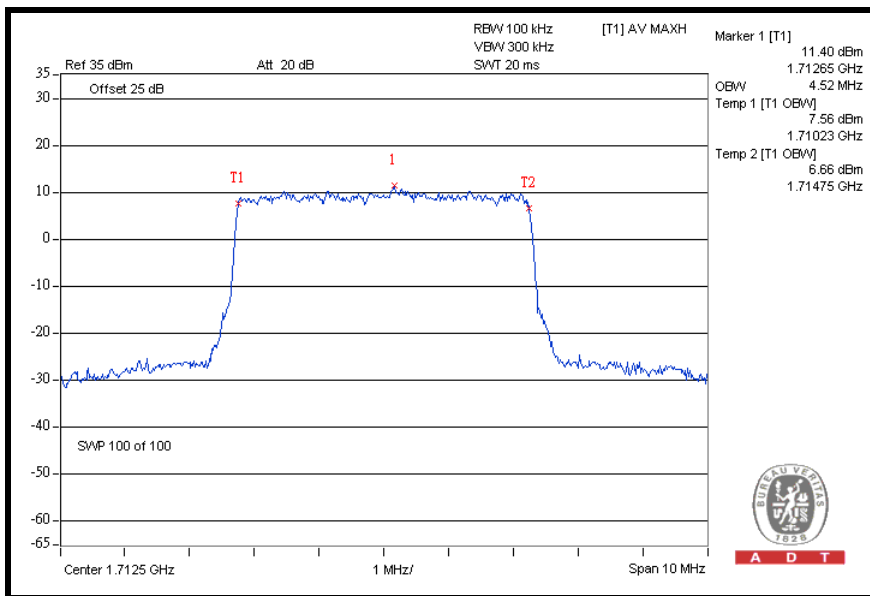
CH 20375



CHANNEL BANDWIDTH: 5MHz / 16QAM

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
19975	1712.5	4.52
20175	1732.5	4.52
20375	1752.5	4.48

CH 19975



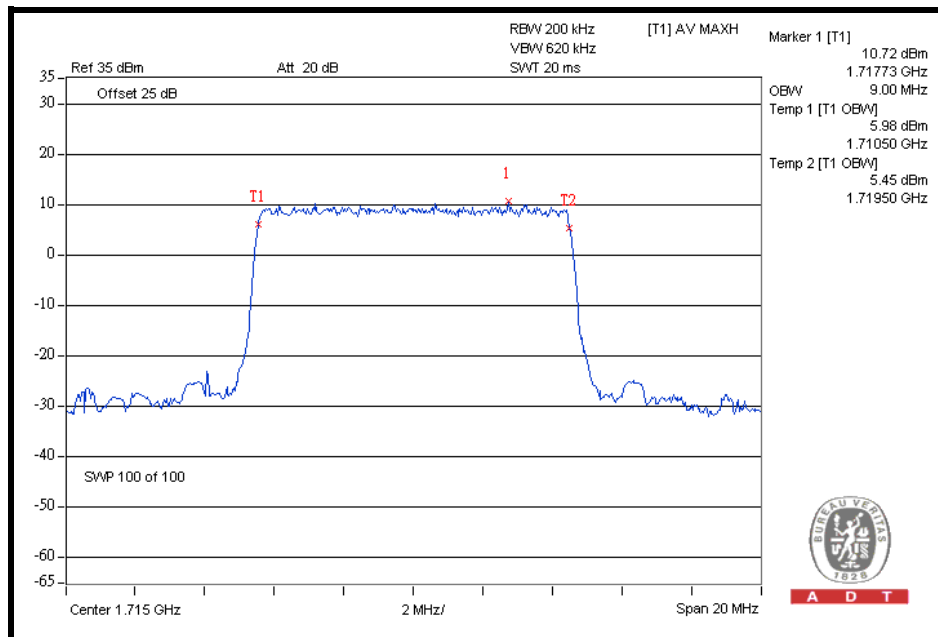


A D T

CHANNEL BANDWIDTH: 10MHz / QPSK

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
20000	1715.0	9.00
20175	1732.5	9.00
20350	1750.0	9.00

CH 20000

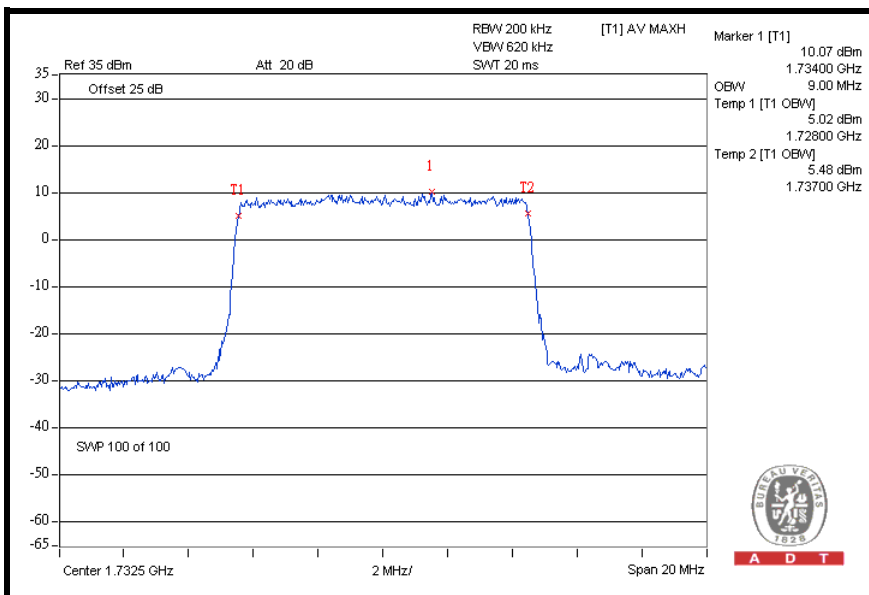


A D T

CHANNEL BANDWIDTH: 10MHz / 16QAM

CH	FREQUENCY (MHz)	MAX. OUTPUT POWER -26 dBc BANDWIDTH (MHz)
20000	1715.0	9.00
20175	1732.5	9.00
20350	1750.0	8.97

CH 20175



4.4 PEAK TO AVERAGE RATIO

4.4.1 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

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
* ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100039	Jan. 11, 2011	Jan. 10, 2012
* Mini-Circuits Power Splitter	ZN2PD-9G	NA	May 25, 2011	May 24, 2012
* Hewlett Packard RF cable	8120-6192	01428251	NA	NA
* JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
* Suhner RF cable	SUCOFLEX 104	274403/4	Jan. 07, 2011	Jan. 06, 2012

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

2. "*" = These equipments are used for the final measurement.

4.4.3 TEST SETUP

Same as Item 4.2.4 (Conducted Power Setup)

4.4.4 TEST PROCEDURES

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

4.4.5 EUT OPERATING CONDITION

Same as Item 4.1.5

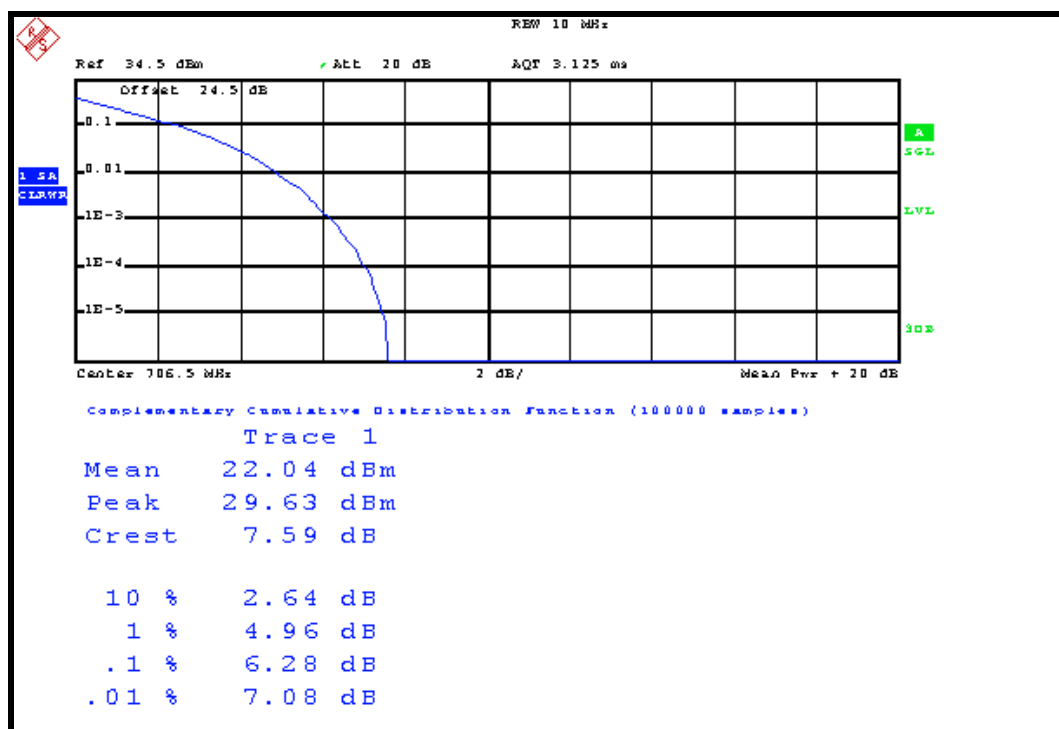
4.4.6 TEST RESULTS

LTE Band 17

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23755	706.5	6.28
23790	710.0	6.00
23825	713.5	6.16

CH 23755



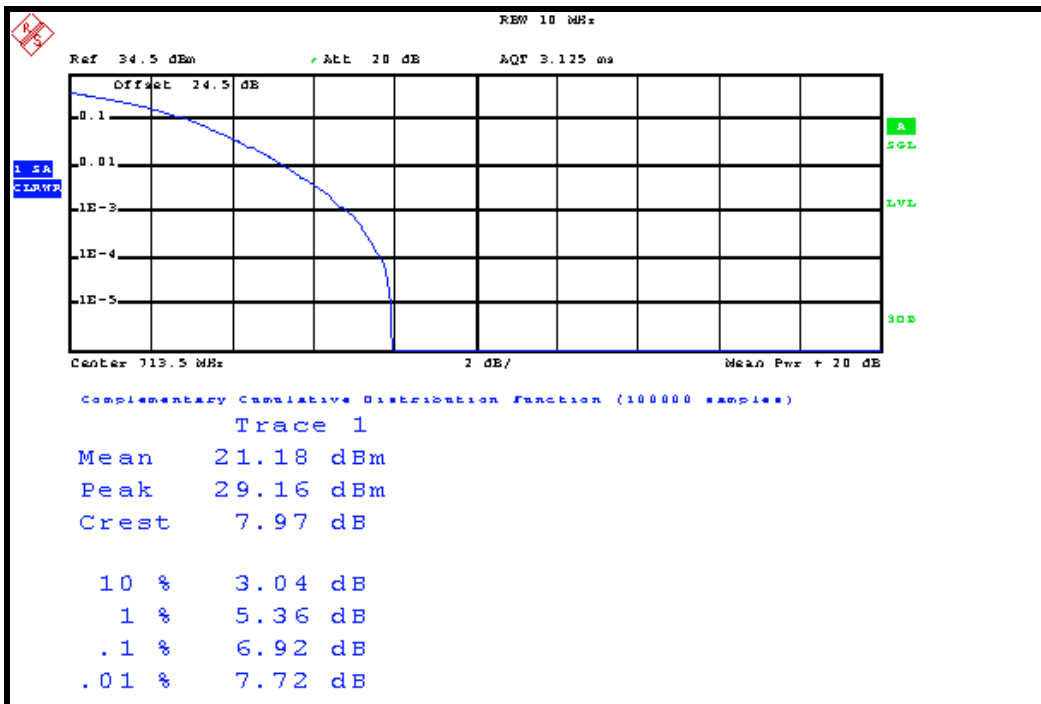


A D T

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23755	706.5	6.84
23790	710.0	6.56
23825	713.5	6.92

CH 23825



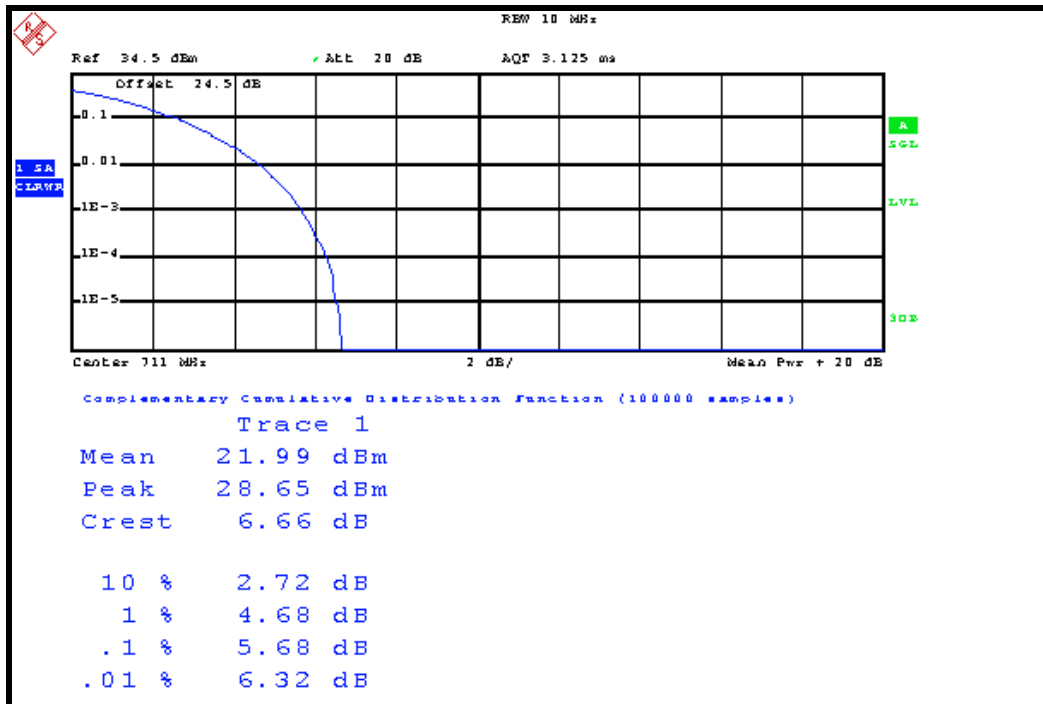


A D T

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23780	709.0	5.52
23790	710.0	5.60
23800	711.0	5.68

CH 23800



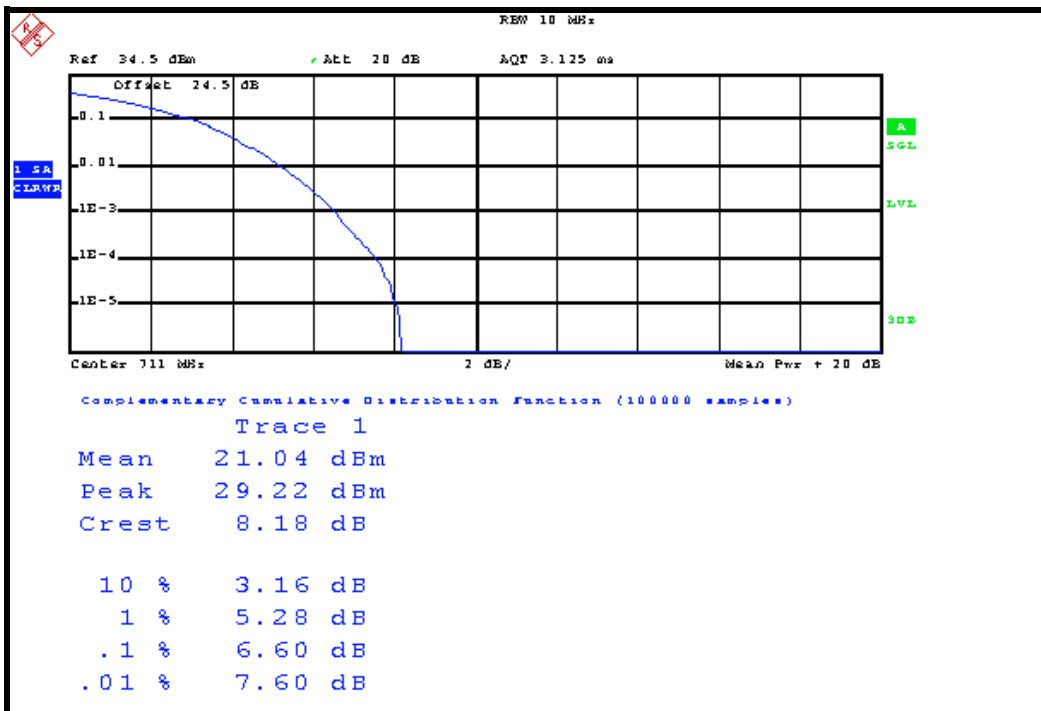


A D T

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23780	709.0	6.56
23790	710.0	6.48
23800	711.0	6.60

CH 23800

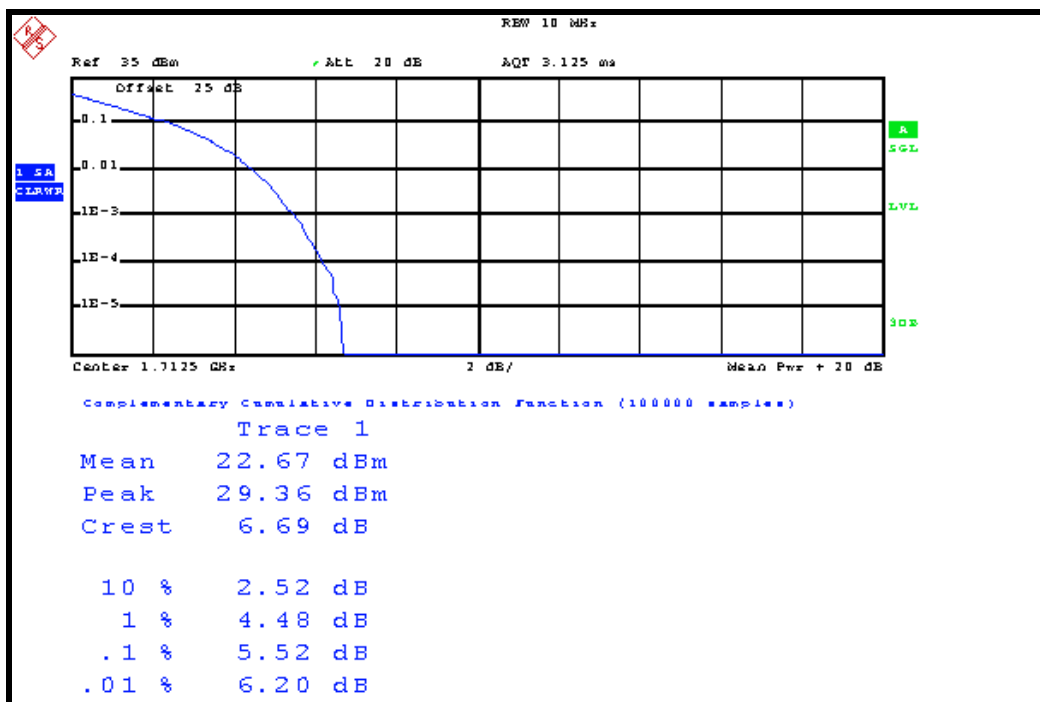


LTE Band 4

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19975	1712.5	5.52
20175	1732.5	5.44
20375	1752.5	5.40

CH 19975



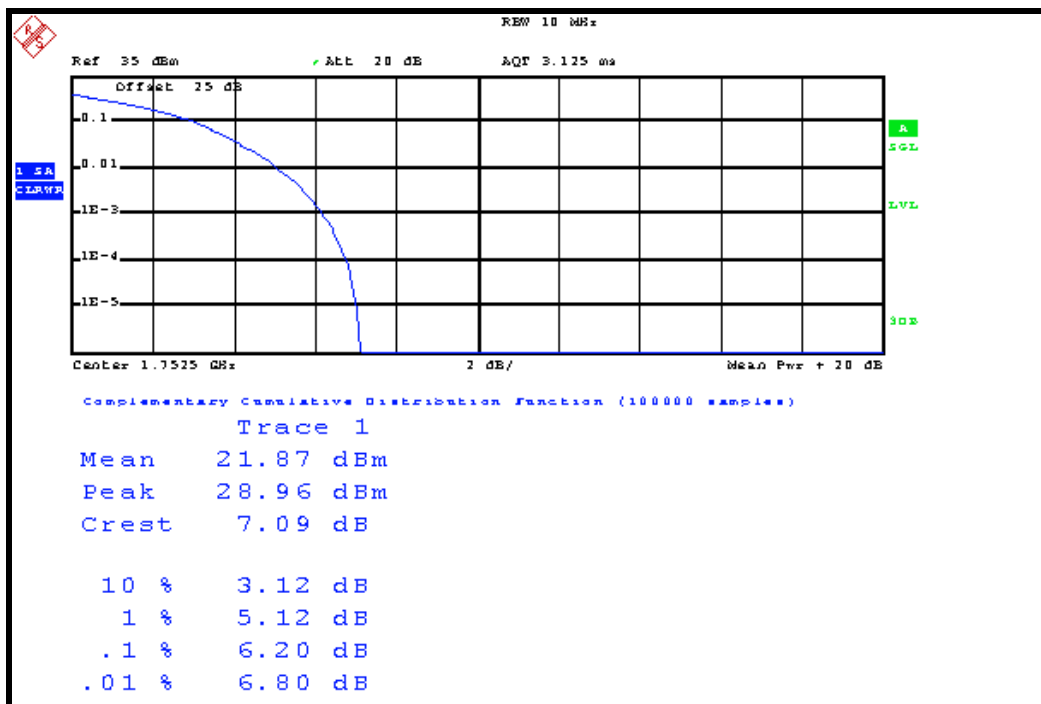


A D T

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19975	1712.5	6.16
20175	1732.5	6.16
20375	1752.5	6.20

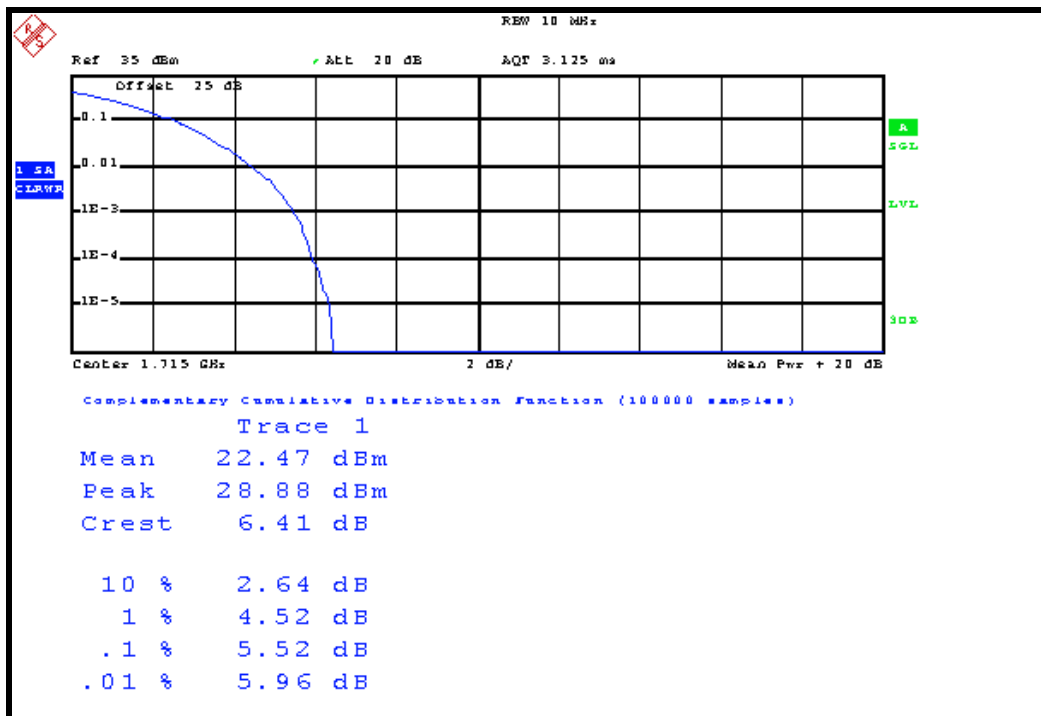
CH 20375



CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20000	1715.0	5.52
20175	1732.5	5.44
20350	1750.0	5.44

CH 20000



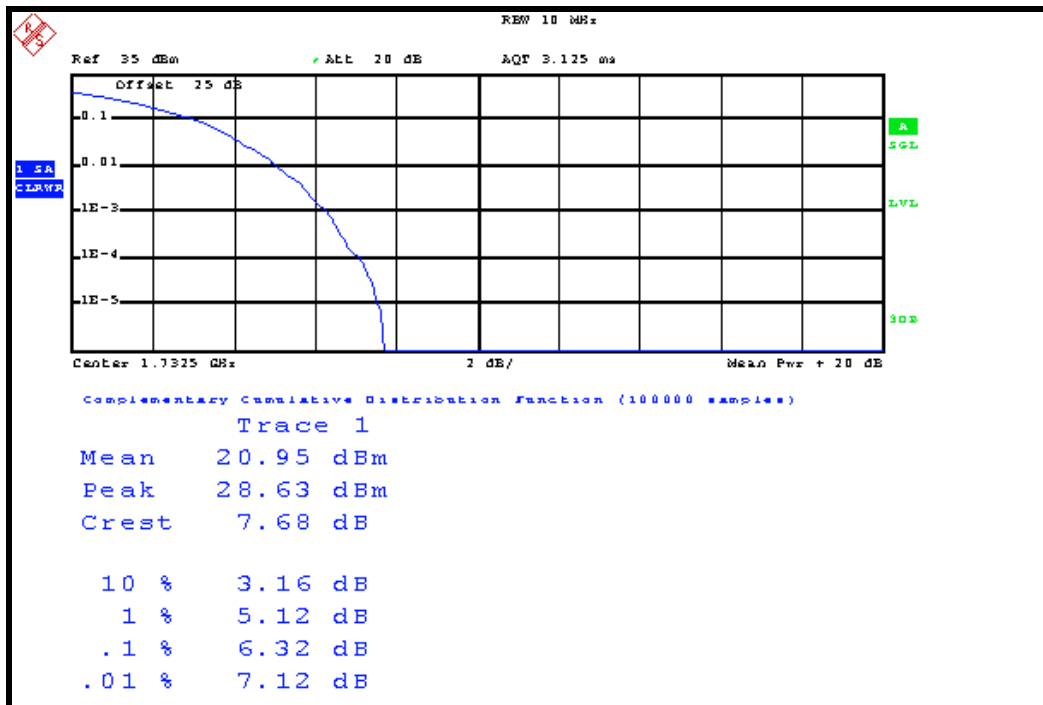


A D T

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB

CH	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20000	1715.0	6.20
20175	1732.5	6.32
20350	1750.0	6.24

CH 20175



4.5 BAND EDGE MEASUREMENT

4.5.1 LIMITS OF BAND EDGE MEASUREMENT

For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm . 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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
* ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100039	Jan. 11, 2011	Jan. 10, 2012
* Mini-Circuits Power Splitter	ZN2PD-9G	NA	May 25, 2011	May 24, 2012
* Hewlett Packard RF cable	8120-6192	01428251	NA	NA
* JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
* Suhner RF cable	SUCOFLEX 104	274403/4	Jan. 07, 2011	Jan. 06, 2012

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

2. "*" = These equipments are used for the final measurement.

4.5.3 TEST SETUP

Same as Item 4.1.4 (Conducted Power Setup)

4.5.4 TEST PROCEDURES

- a. The EUT was set up for the maximum peak power with LTE/WCDMA link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
- b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 50kHz and VB of the spectrum is 200kHz.
- d. Record the max trace plot into the test report.

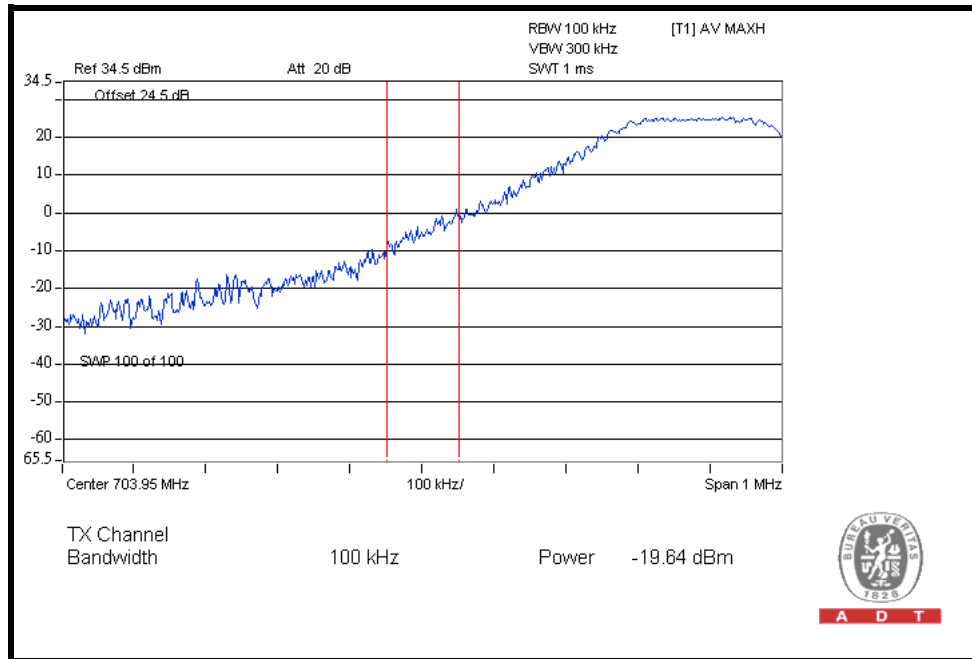
4.5.5 EUT OPERATING CONDITION

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

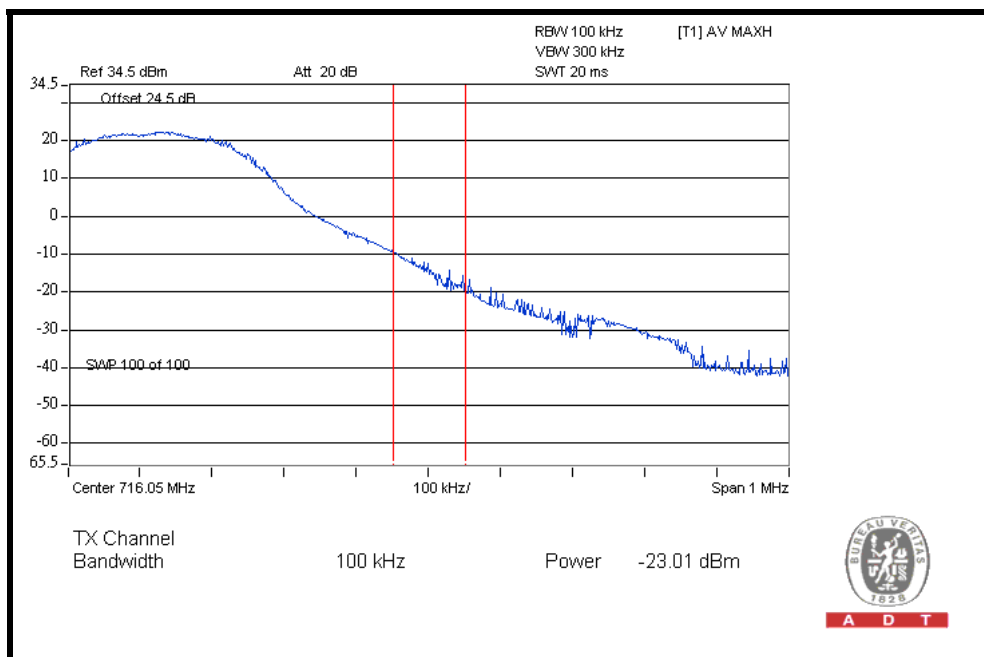
4.5.6 TEST RESULTS

LTE Band 17 CHANNEL BANDWIDTH: 5MHz / 1RB ALLOCATED

LOWER BAND EDGE

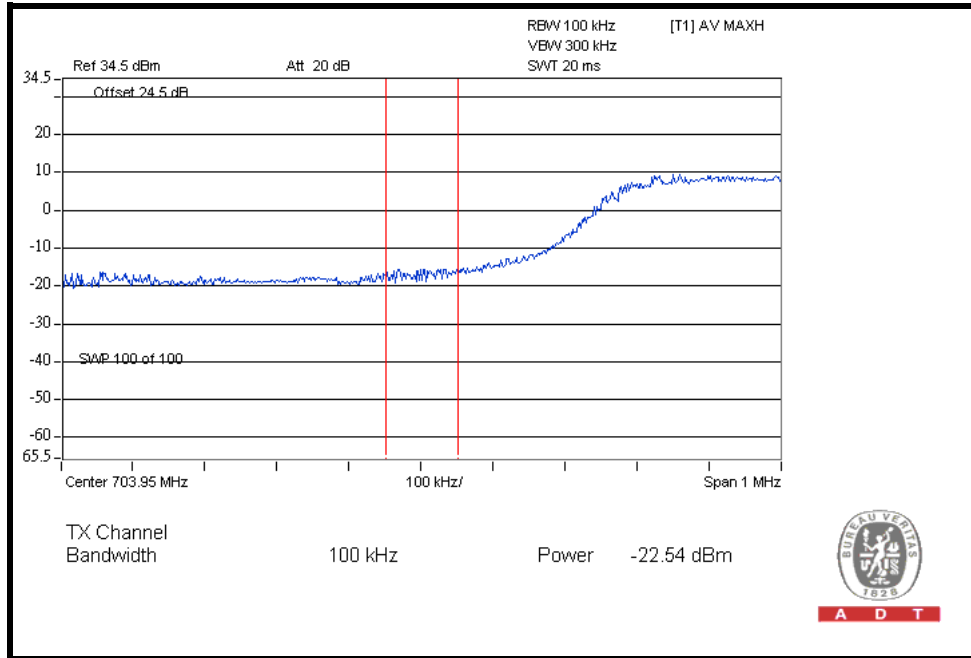


HIGHER BAND EDGE

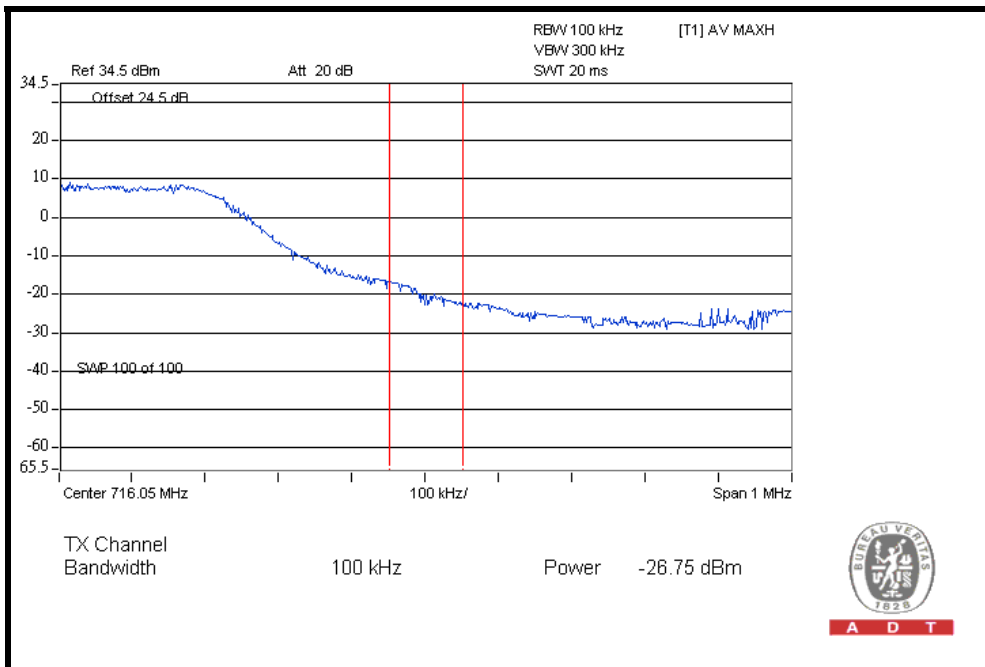


CHANNEL BANDWIDTH: 5MHz / FULL RB ALLOCATED

LOWER BAND EDGE



HIGHER BAND EDGE

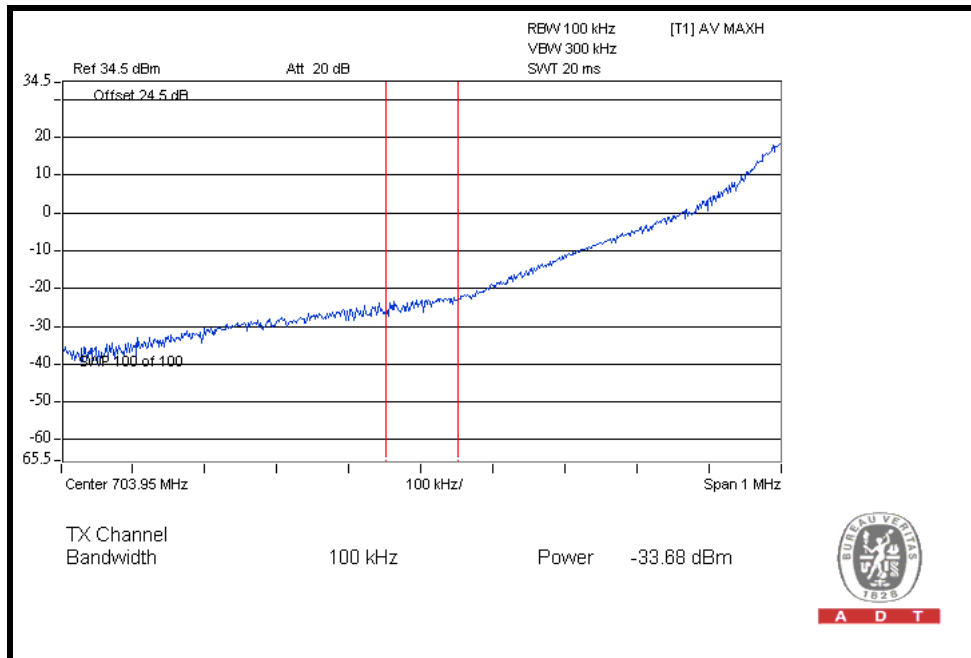




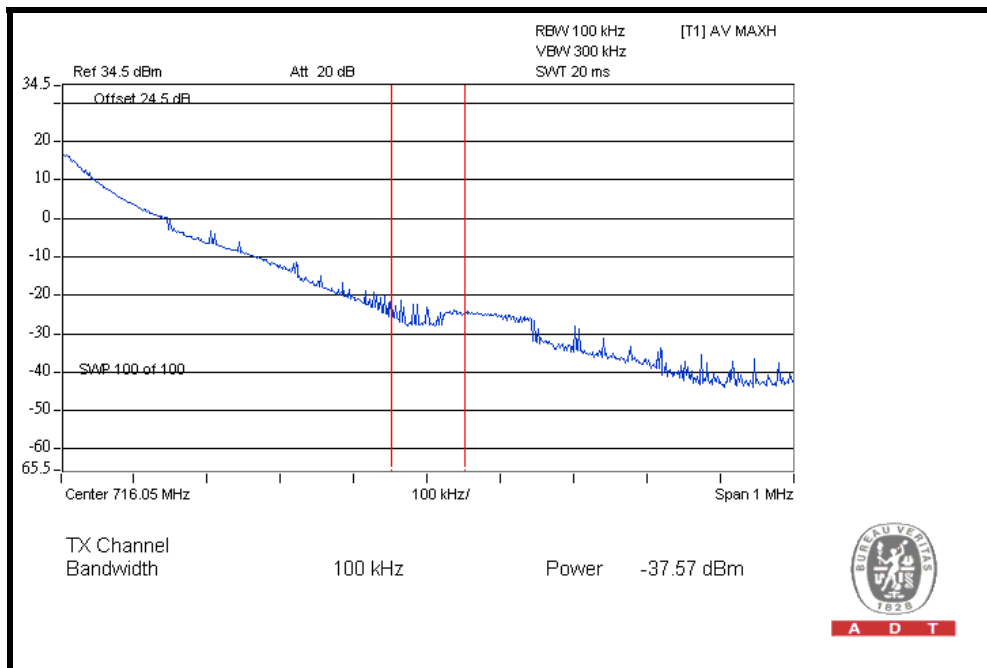
A D T

CHANNEL BANDWIDTH: 10MHz / 1RB ALLOCATED

LOWER BAND EDGE



HIGHER BAND EDGE

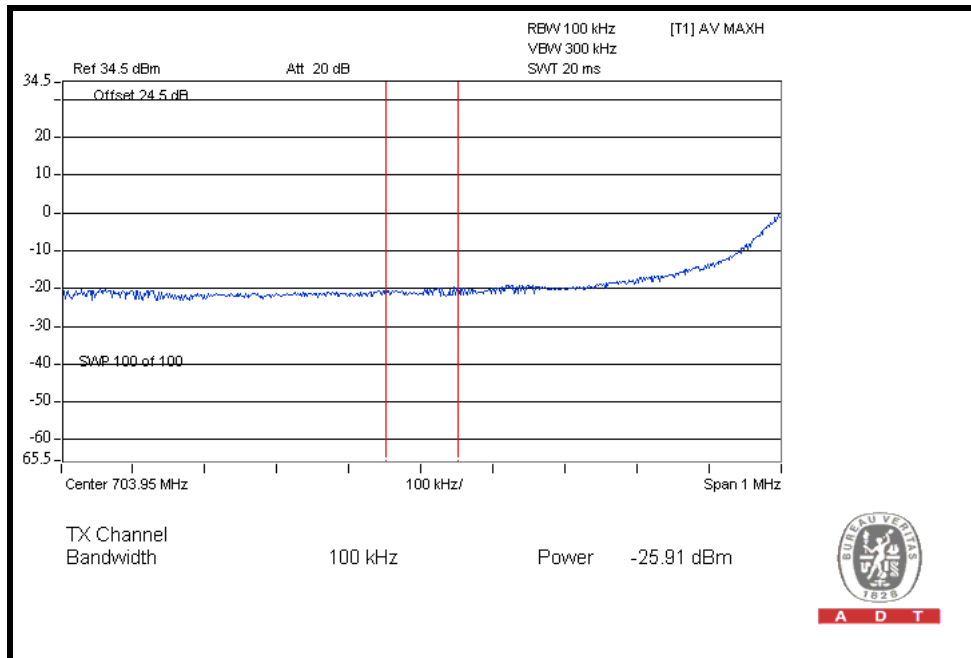




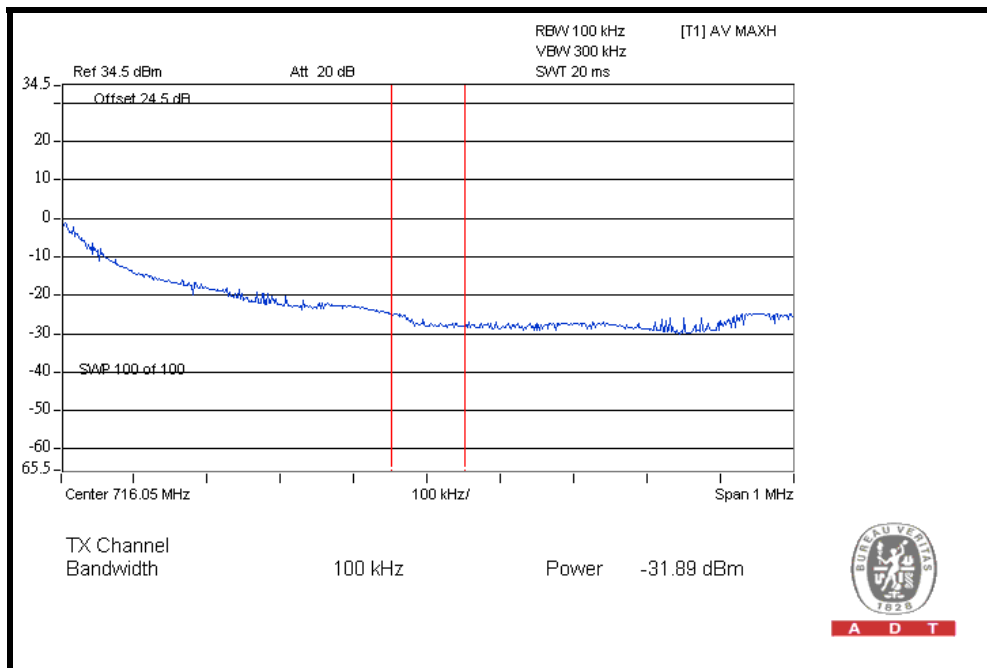
A D T

CHANNEL BANDWIDTH: 10MHz / FULL RB ALLOCATED

LOWER BAND EDGE



HIGHER BAND EDGE



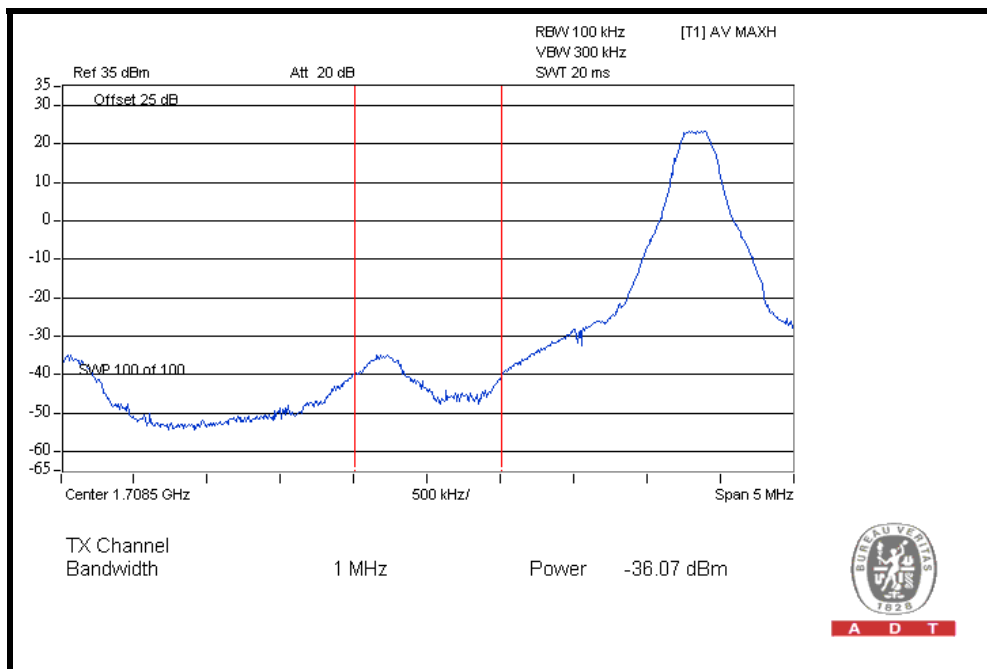
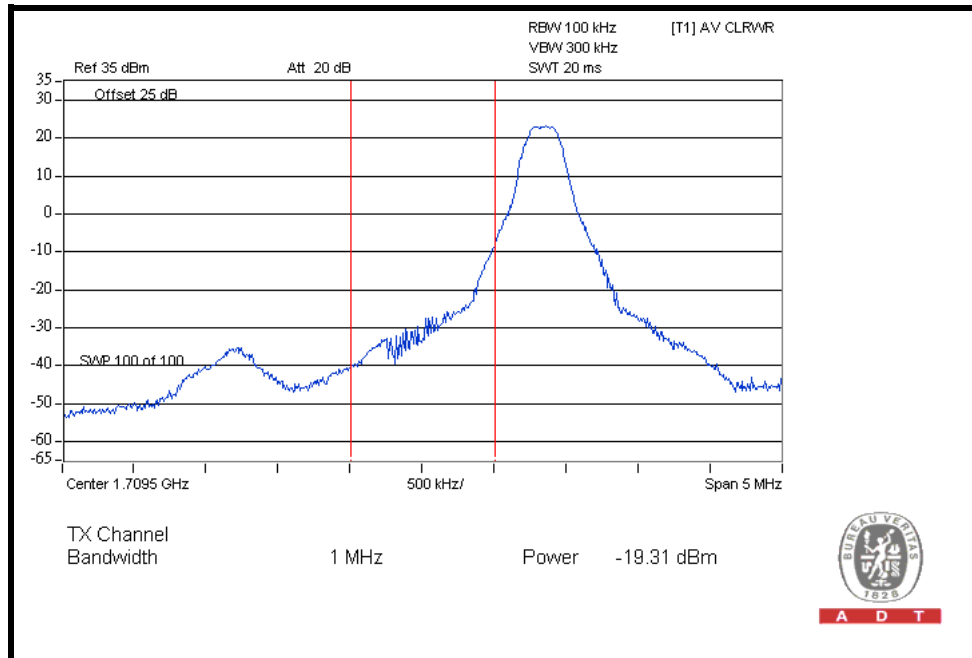


A D T

LTE Band 4

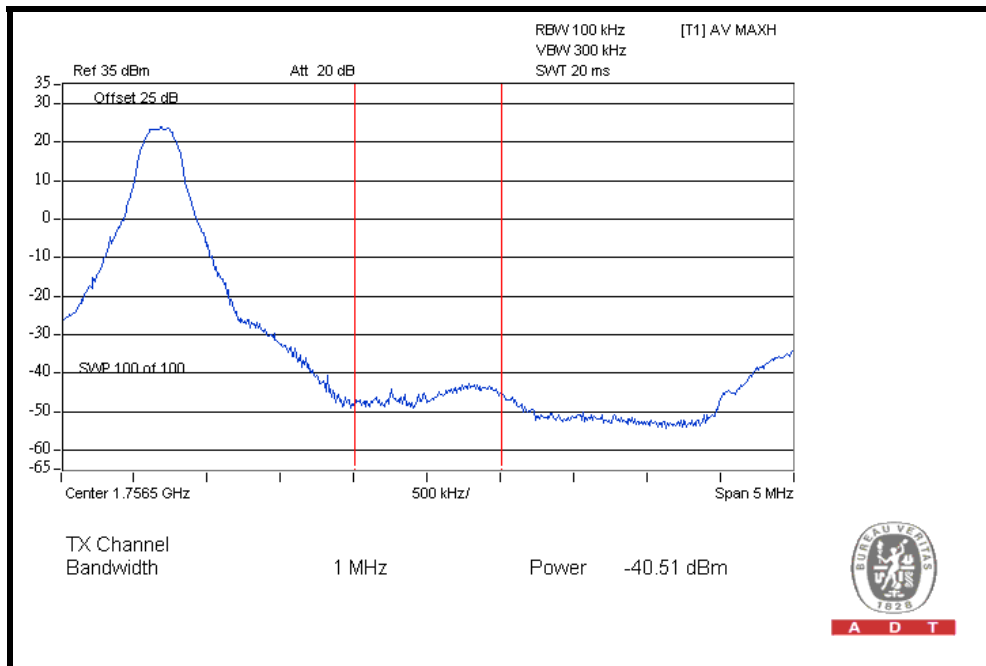
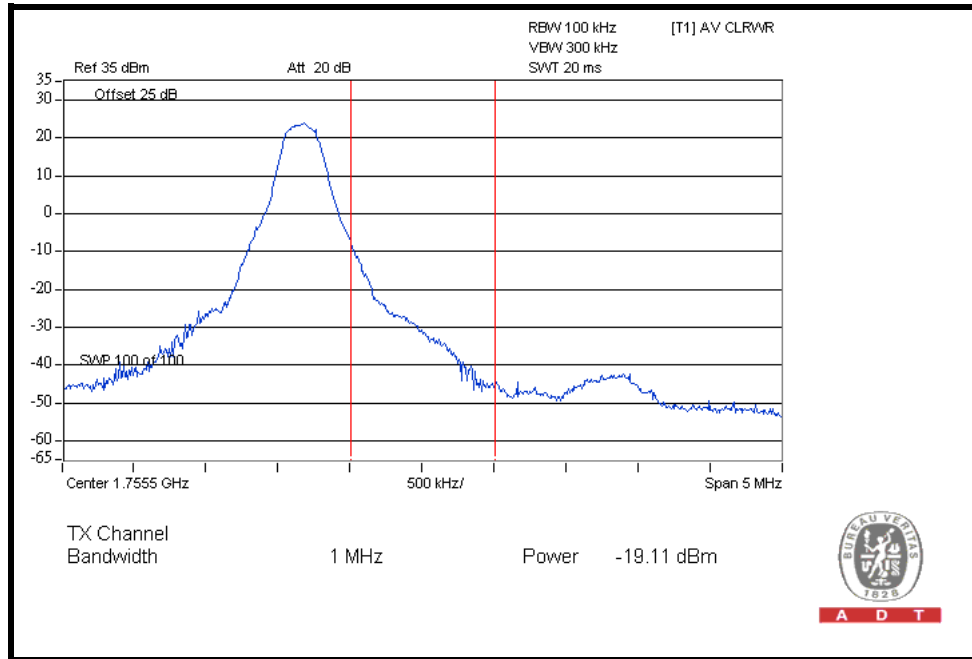
CHANNEL BANDWIDTH: 5MHz / 1 RB ALLOCATED AT THE LOWER EDGE

LOWER BAND EDGE



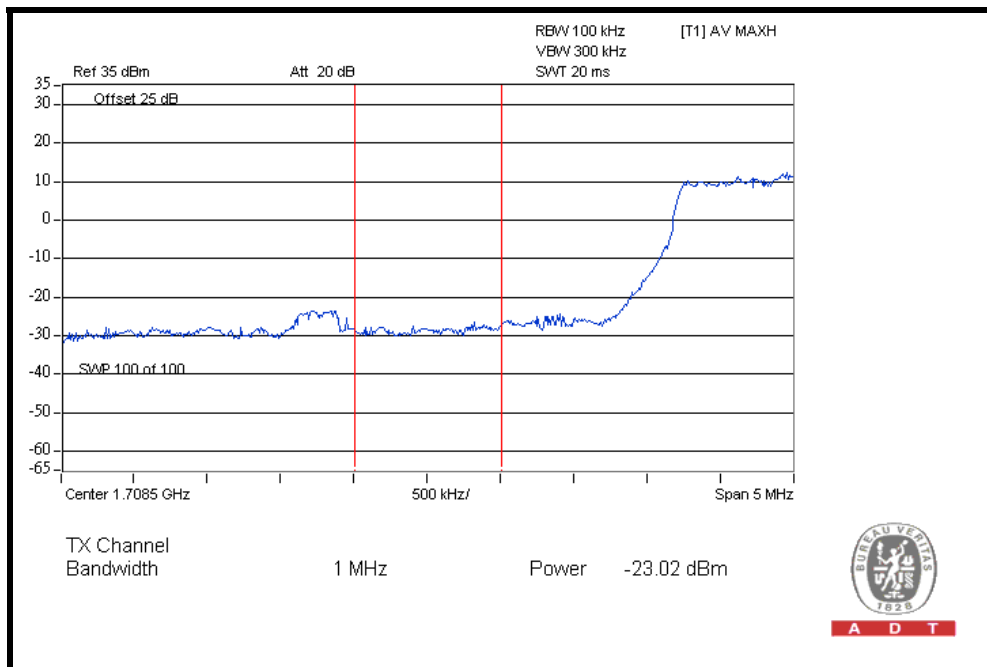
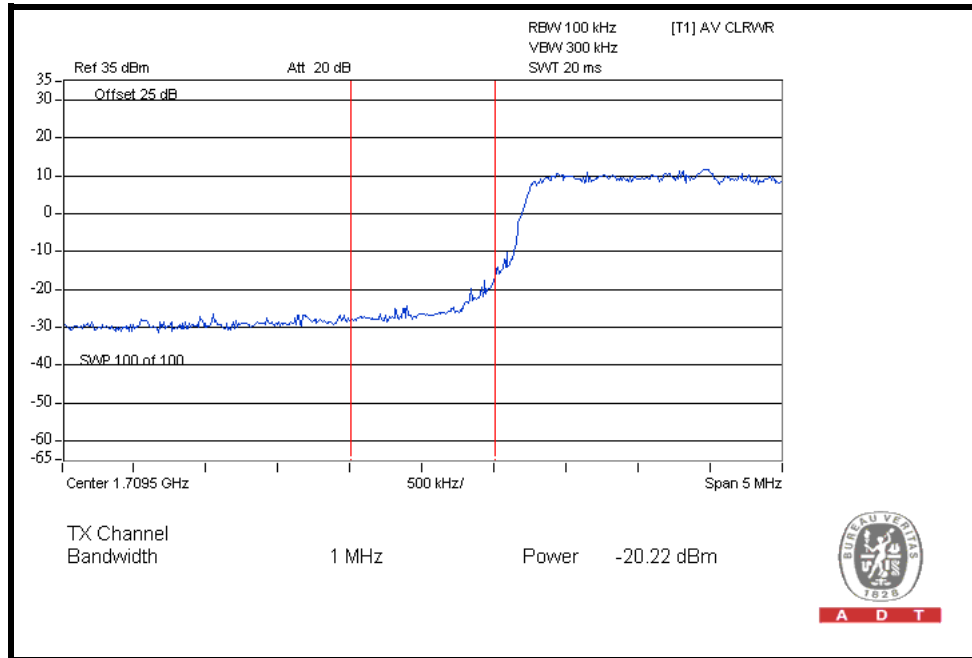
CHANNEL BANDWIDTH: 5MHz / 1 RB ALLOCATED AT THE UPPER EDGE

HIGHER BAND EDGE

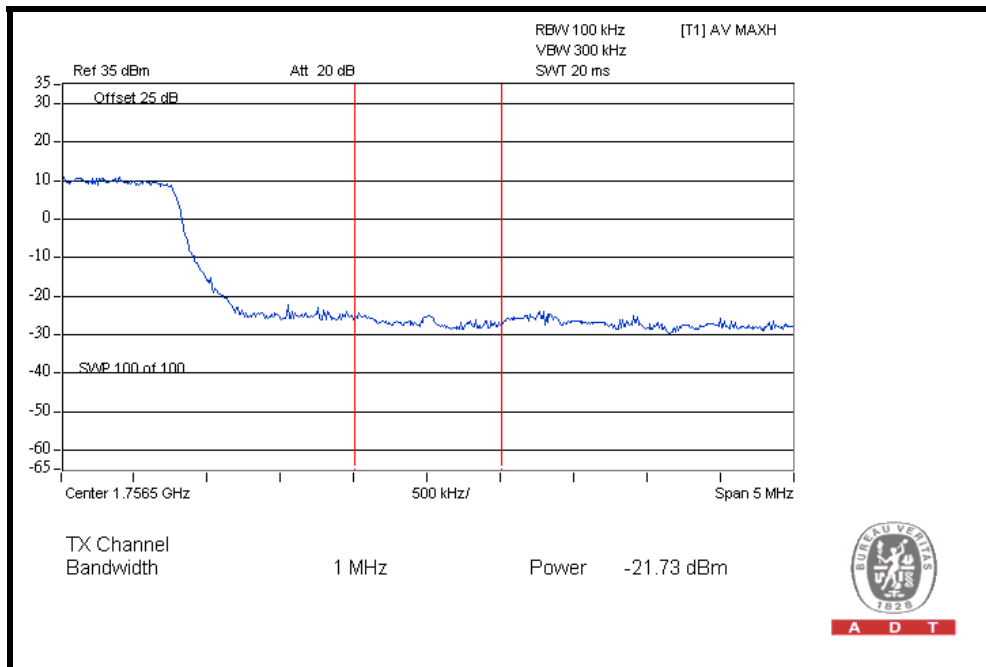
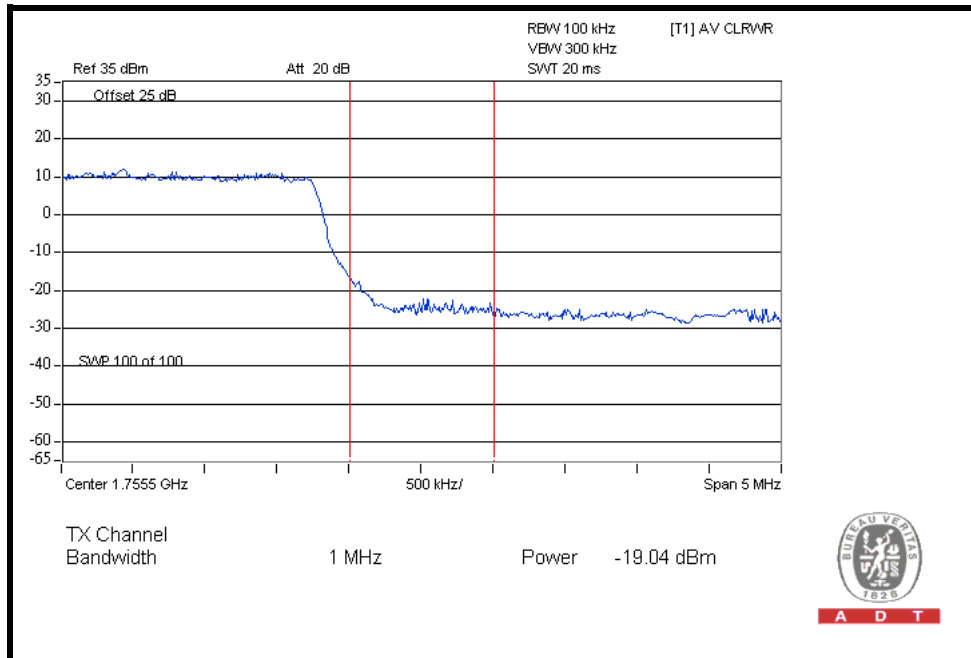


CHANNEL BANDWIDTH: 5MHz / FULL RB ALLOCATION

LOWER BAND EDGE

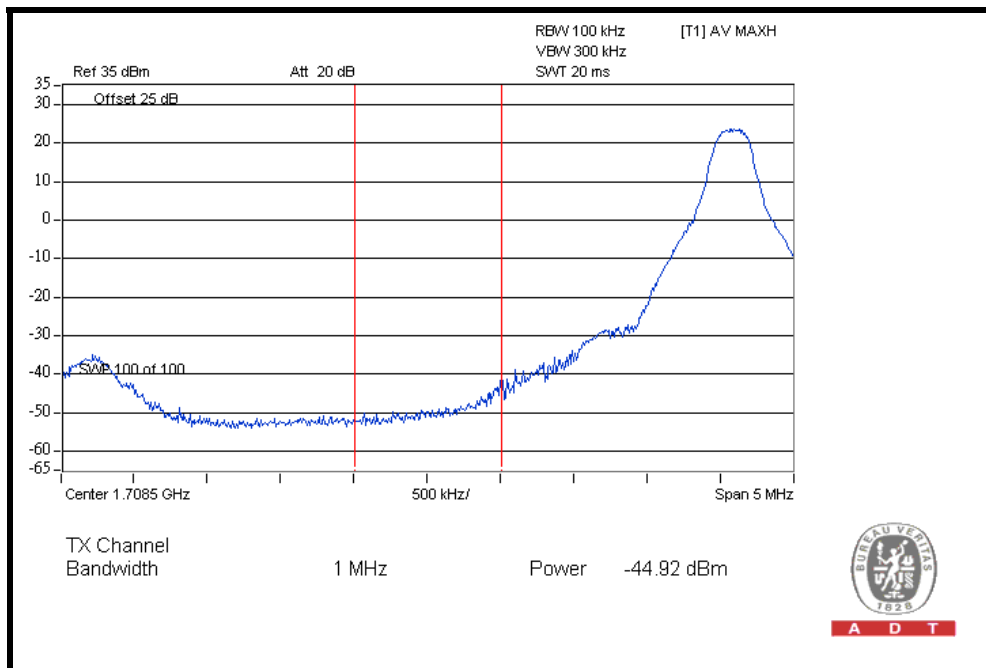
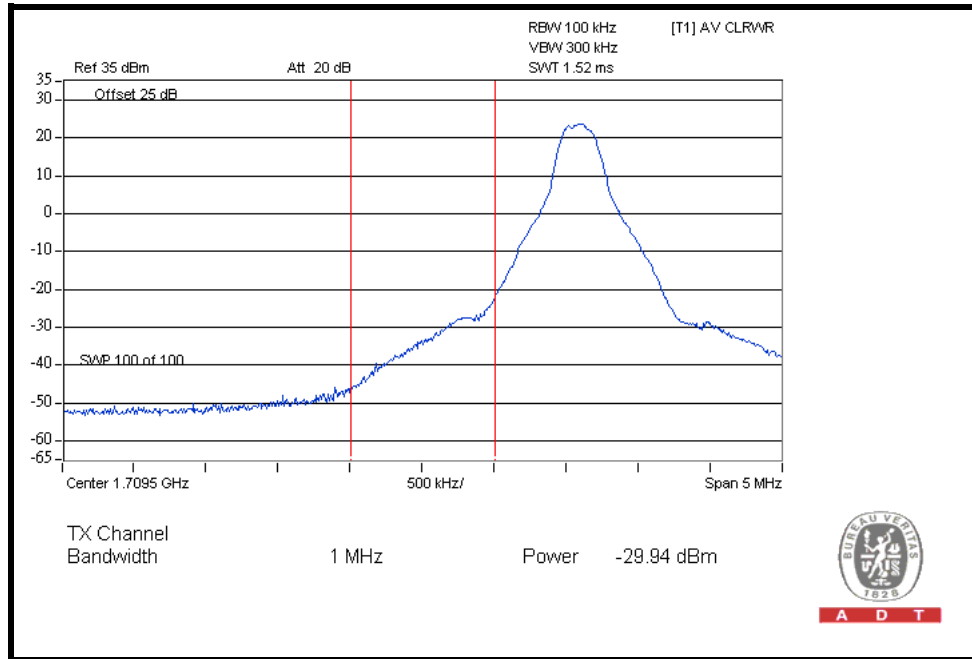


HIGHER BAND EDGE



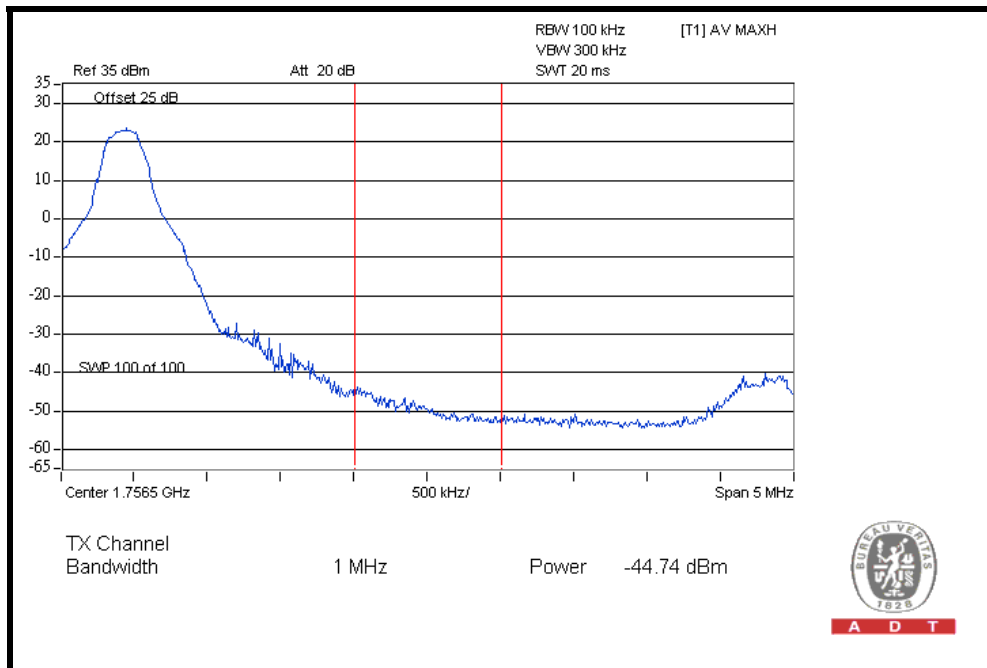
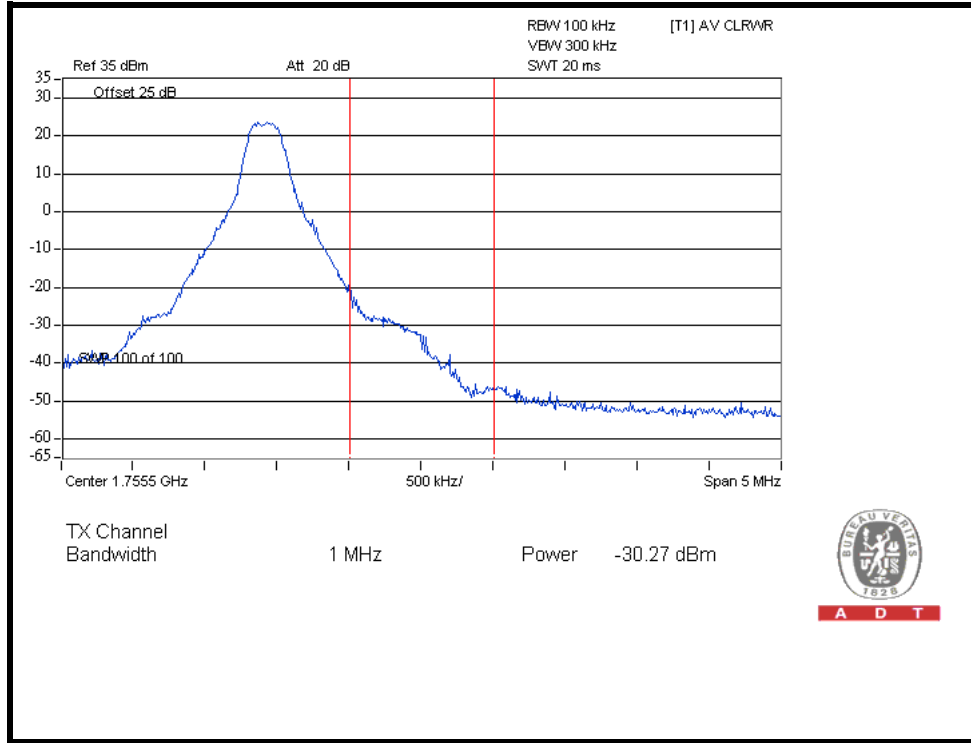
CHANNEL BANDWIDTH: 10MHz / 1 RB ALLOCATED AT THE LOWER EDGE

LOWER BAND EDGE



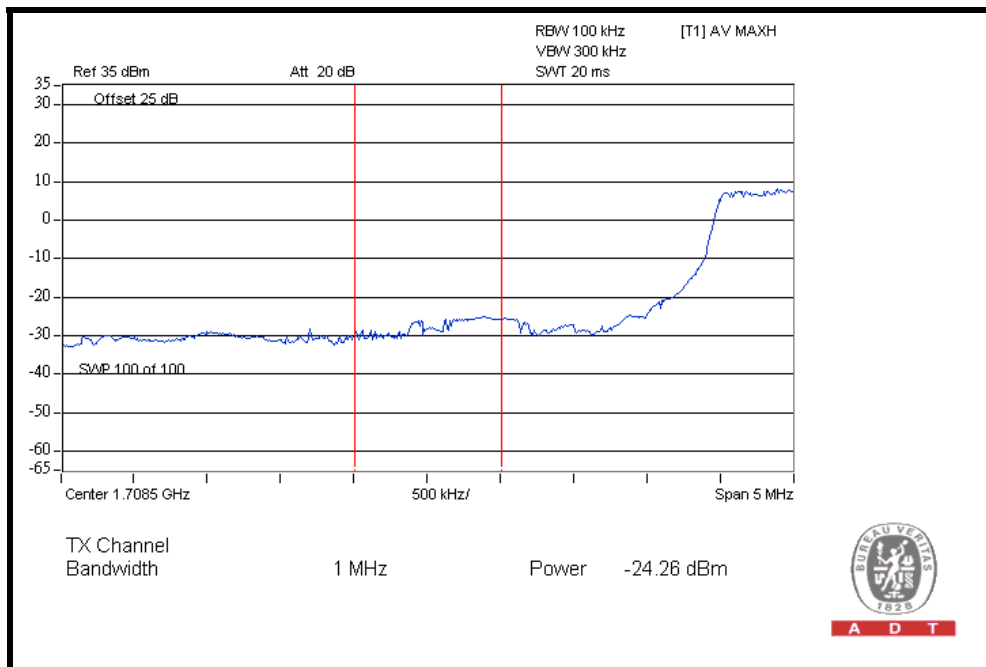
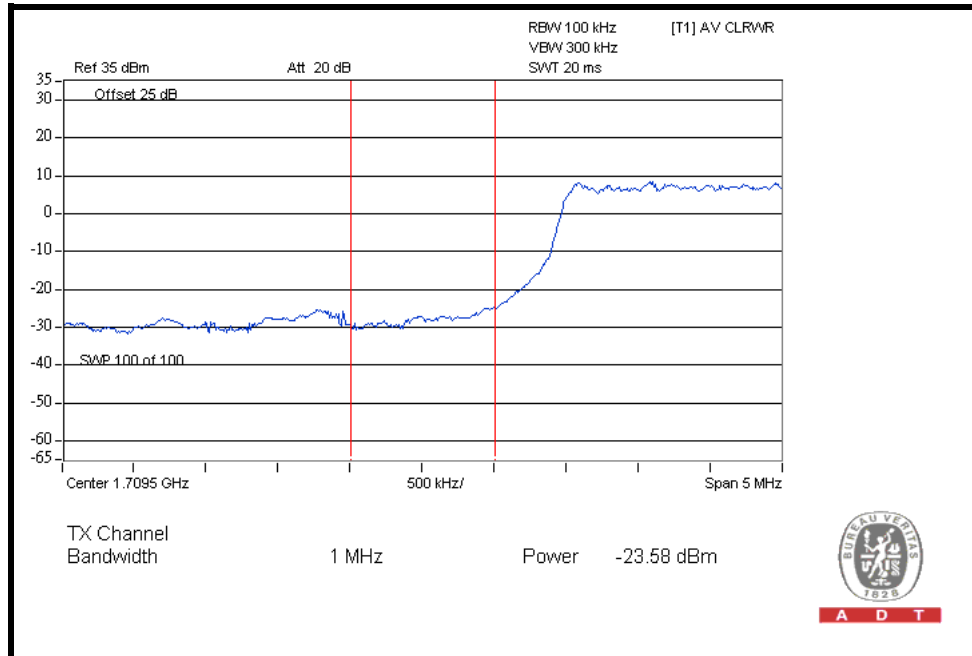
CHANNEL BANDWIDTH: 10MHz / 1 RB ALLOCATED AT THE UPPER EDGE

HIGHER BAND EDGE

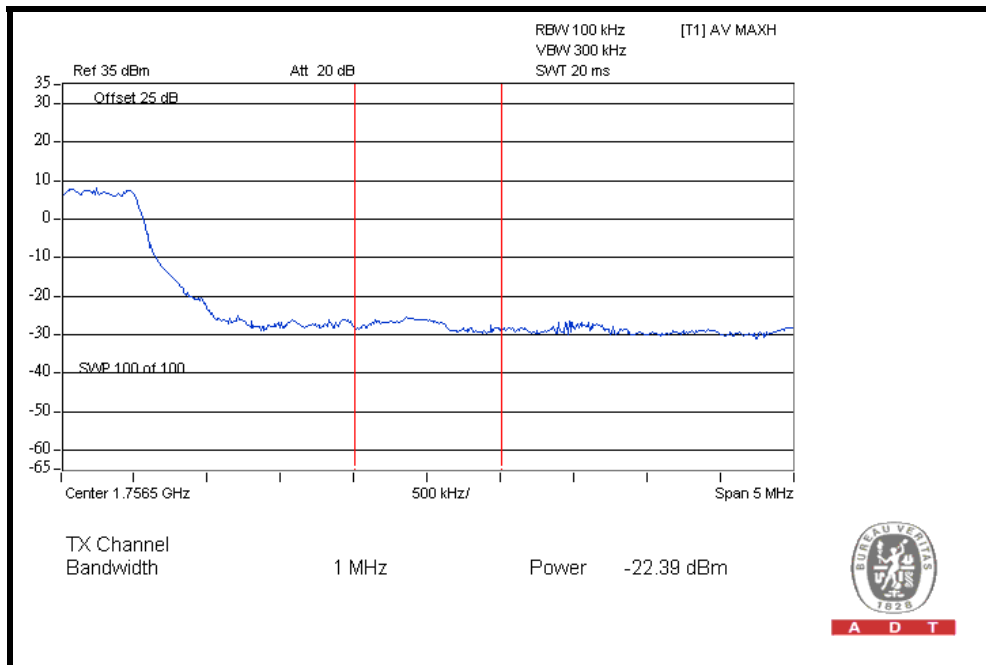
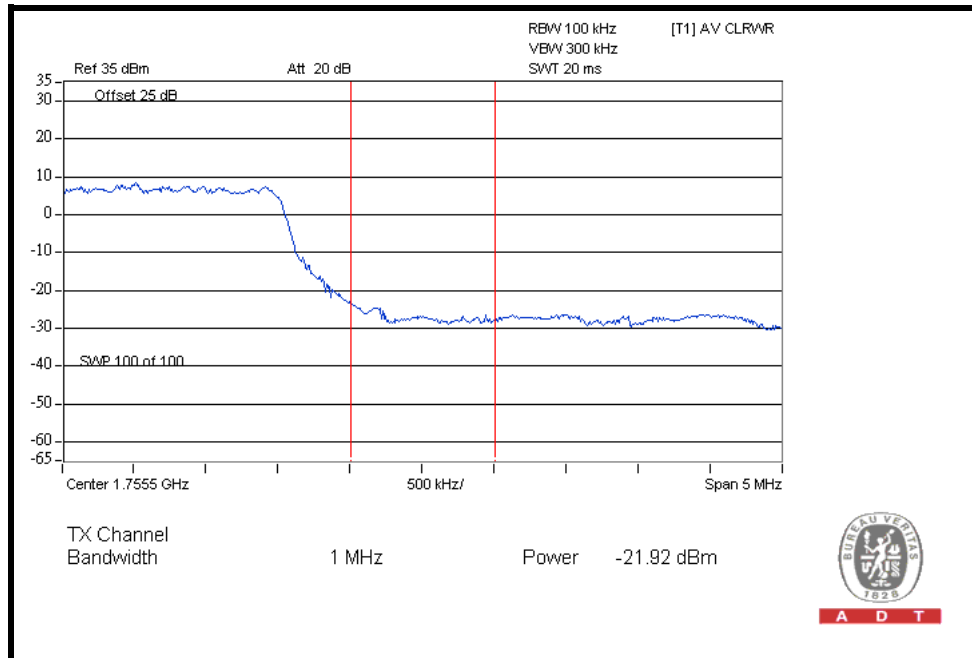


CHANNEL BANDWIDTH: 10MHz / FULL RB ALLOCATION

LOWER BAND EDGE



HIGHER BAND EDGE



4.6 CONDUCTED SPURIOUS EMISSIONS

4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

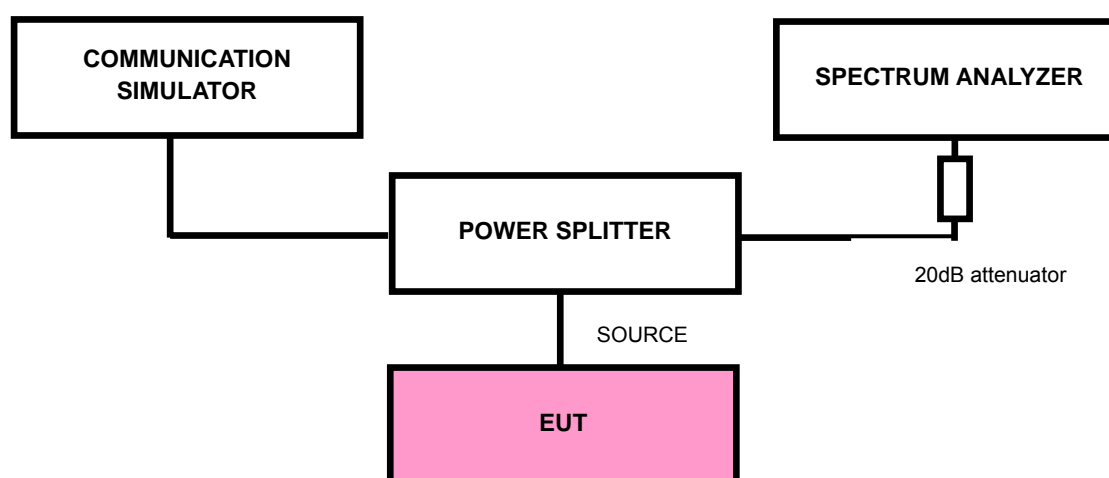
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
* ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012
* Wainwright Instruments Band Reject Filter	WRCG1850/1910-1 830/1930-60/10SS	SN1	Mar. 23, 2011	Mar. 22, 2012
* Wainwright Instruments High Pass Filter	WHK3.1/18G-10SS	SN3	Mar. 23, 2011	Mar. 22, 2012
* Mini-Circuits Power Splitter	ZAPD-4	NA	Mar. 24, 2011	Mar. 23, 2012
* Hewlett Packard RF cable	8120-6192	01428251	NA	NA
* JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
* Suhner RF cable	SUCOFLEX 104	257029	Jan. 07, 2011	Jan. 06, 2012

- NOTE:**
1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
 2. "*" = These equipments are used for the final measurement.

4.6.3 TEST PROCEDURE

- a. The EUT was set up for the maximum peak power with LTE / WCDMA link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range.).
- b. The conducted spurious emission used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. When the spectrum scanned from 30MHz to 3GHz, it shall be connected to the band reject filter attenuated the carried frequency. The spectrum set RB=1MHz, VB=3MHz.
- d. When the spectrum scanned from 3GHz to 20GHz, it shall be connected to the high pass filter attenuated the carried frequency. The spectrum set RB=1MHz, VB=3MHz.

4.6.4 TEST SETUP



4.6.5 EUT OPERATING CONDITIONS

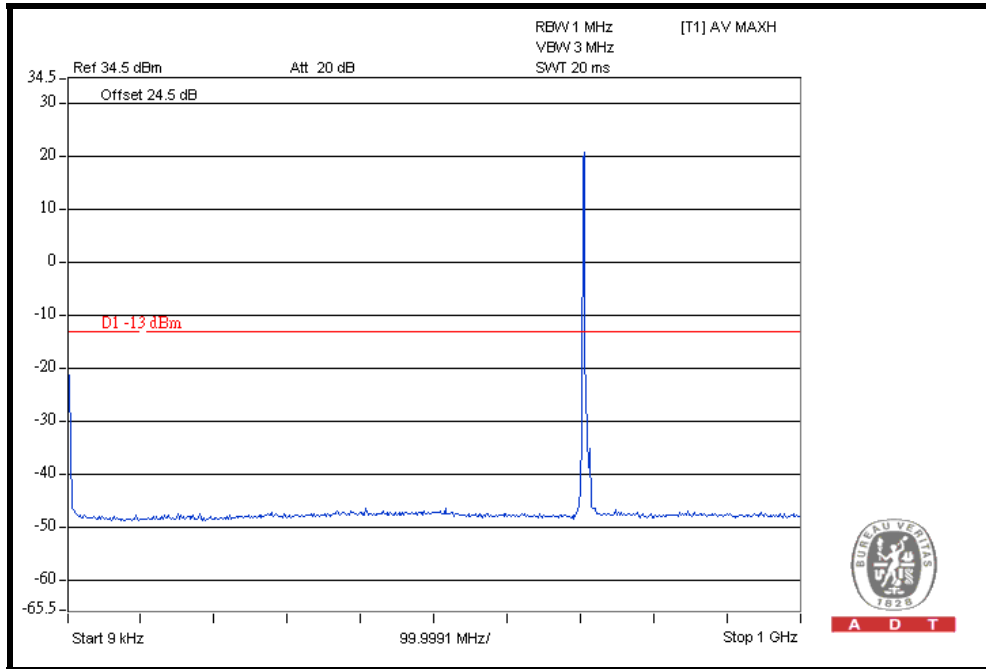
- a. The EUT makes a phone call to the communication simulator.
- b. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

4.6.6 TEST RESULTS

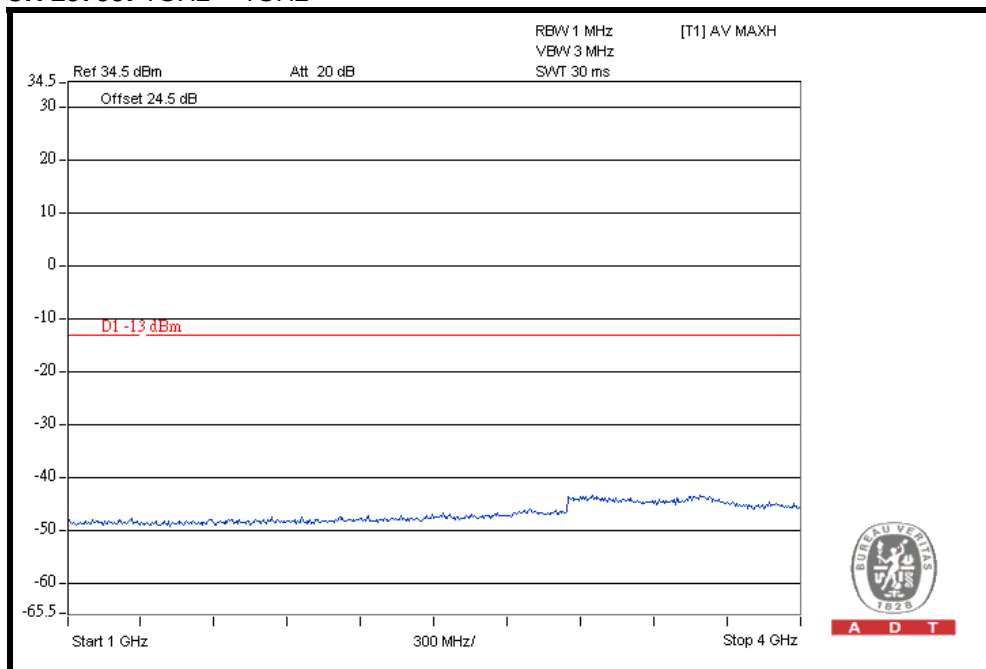
LTE Band 17

CHANNEL BANDWIDTH: 5MHz / 1 RB ALLOCATED AT THE LOWER EDGE

CH 23755: 9kHz ~ 1GHz



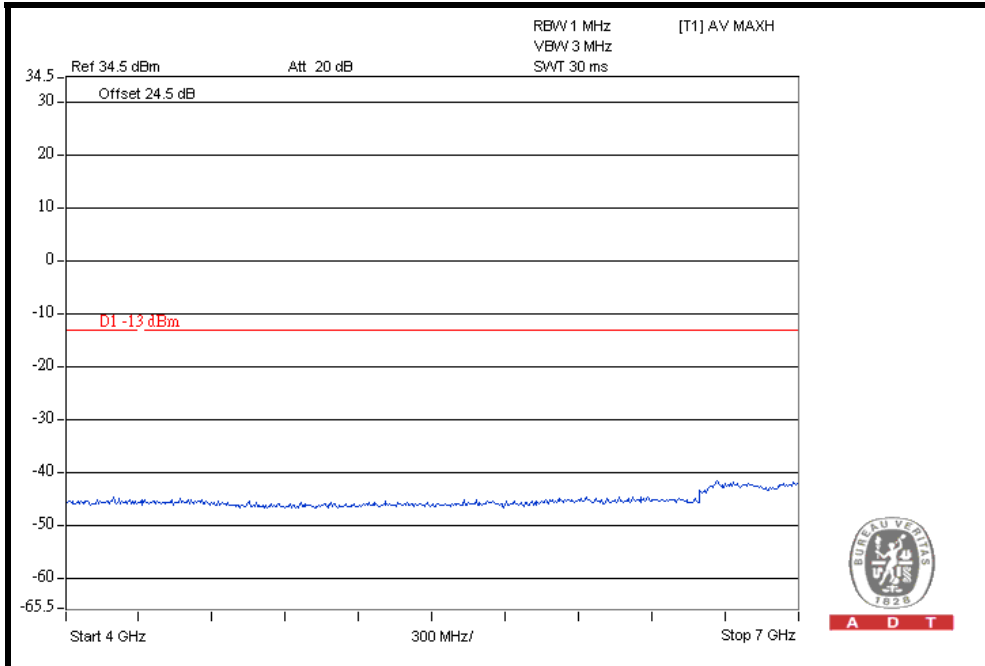
CH 23755: 1GHz ~ 4GHz



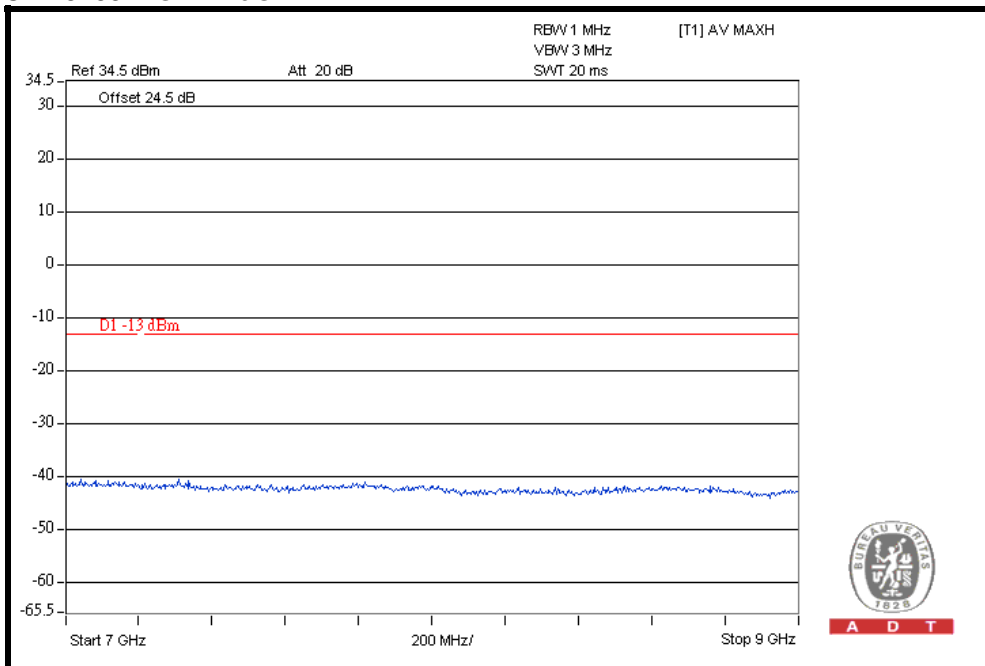


A D T

CH 23755: 4GHz ~ 7GHz



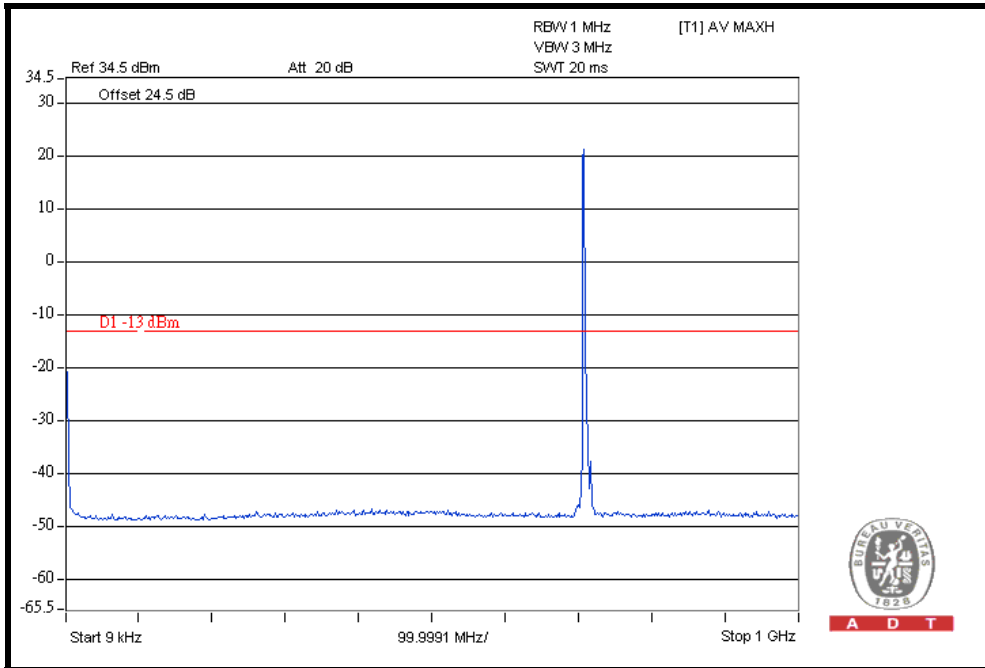
CH 23755: 7GHz ~ 9GHz



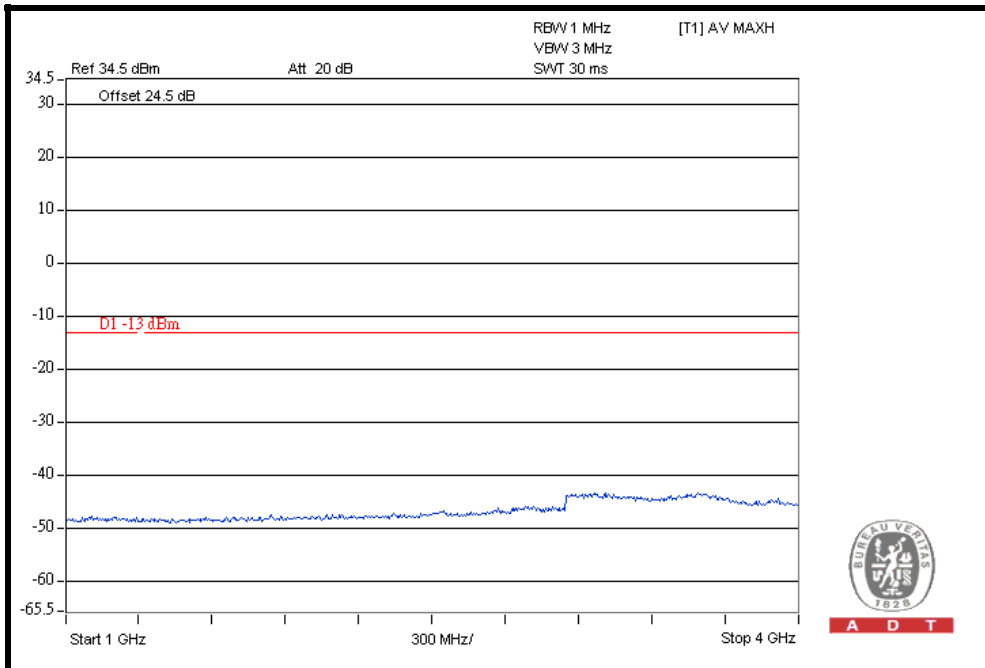


A D T

CH 23790: 9kHz ~ 1GHz



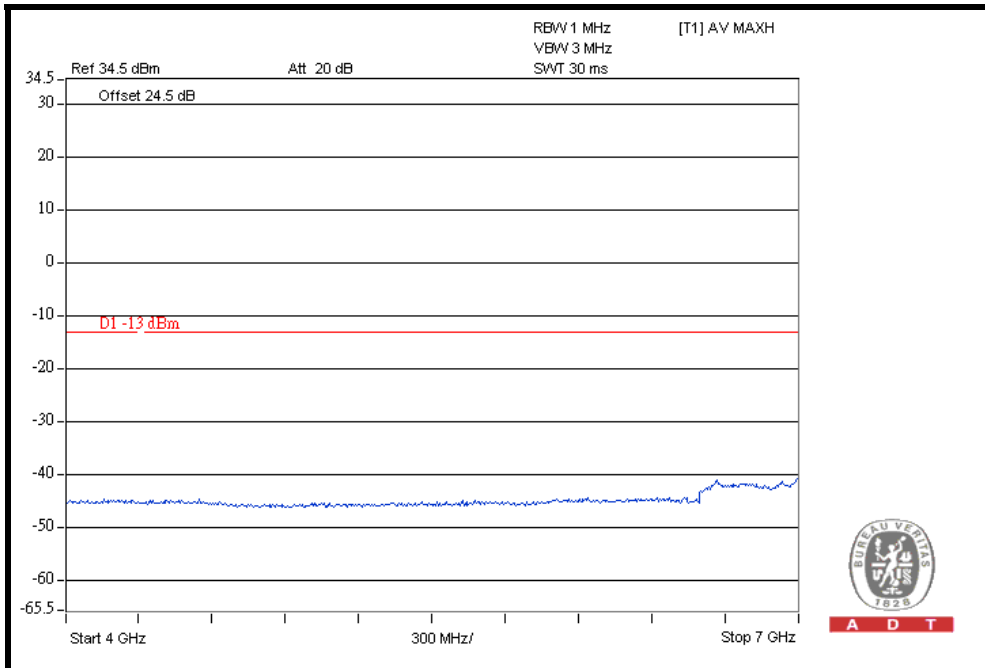
CH 23790: 1GHz ~ 4GHz



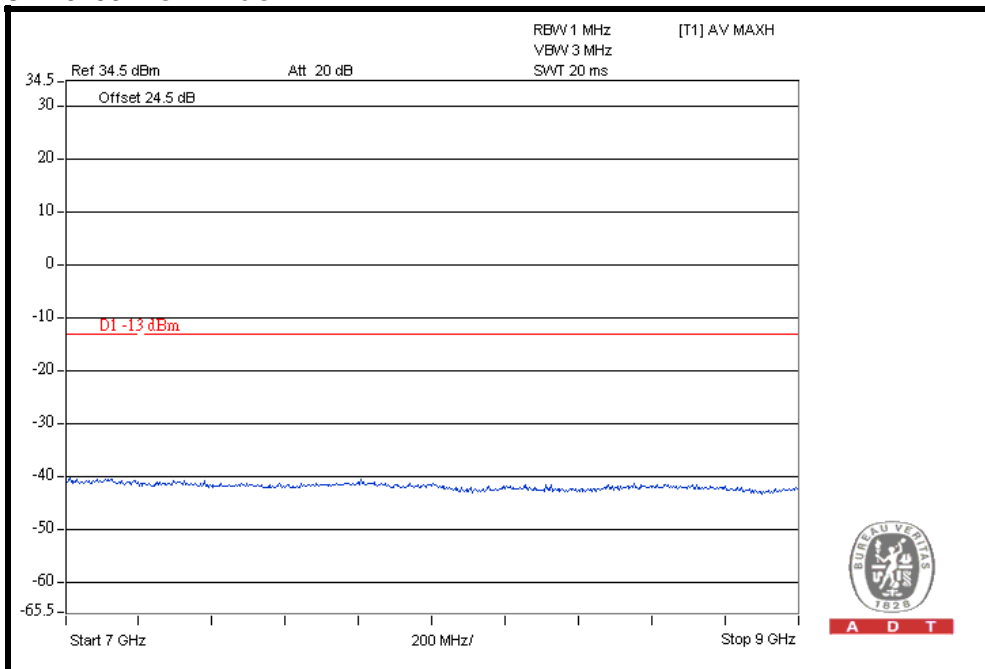


A D T

CH 23790: 4GHz ~ 7GHz



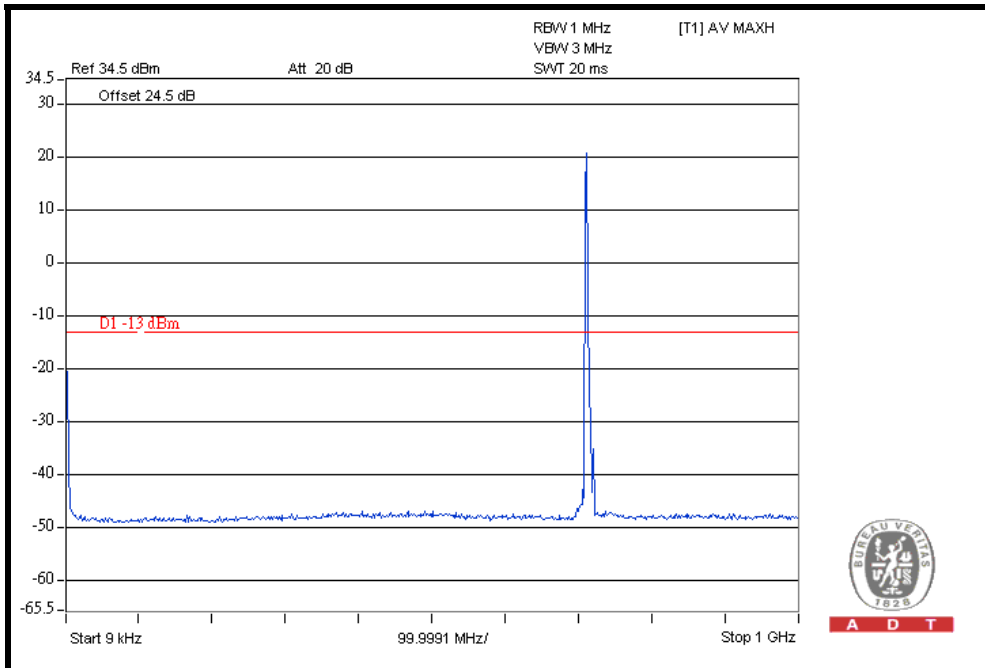
CH 23790: 7GHz ~ 9GHz



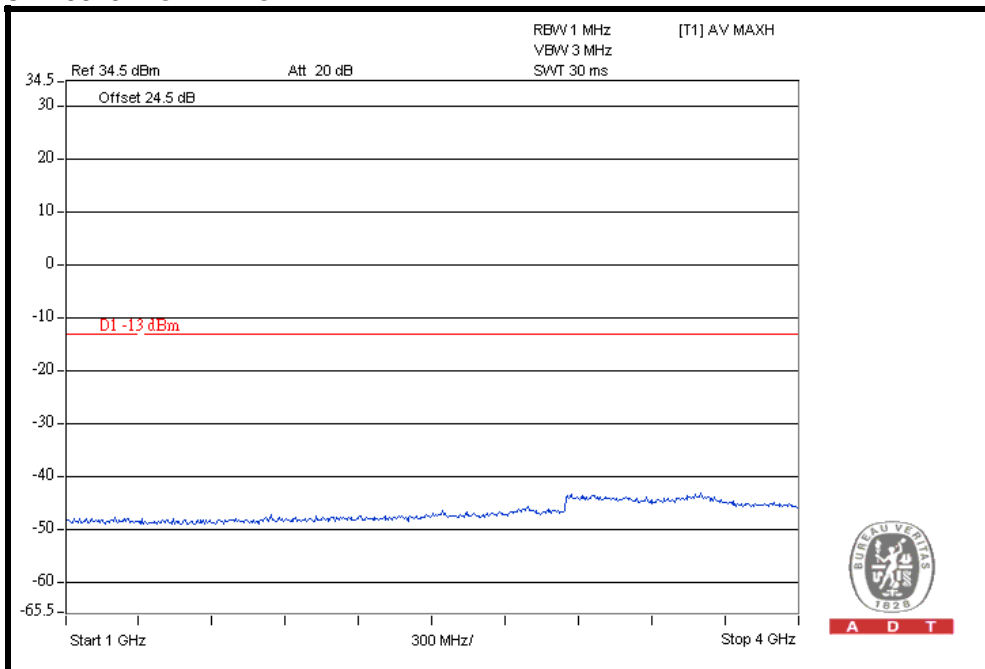


A D T

CH 23825: 9kHz ~ 1GHz



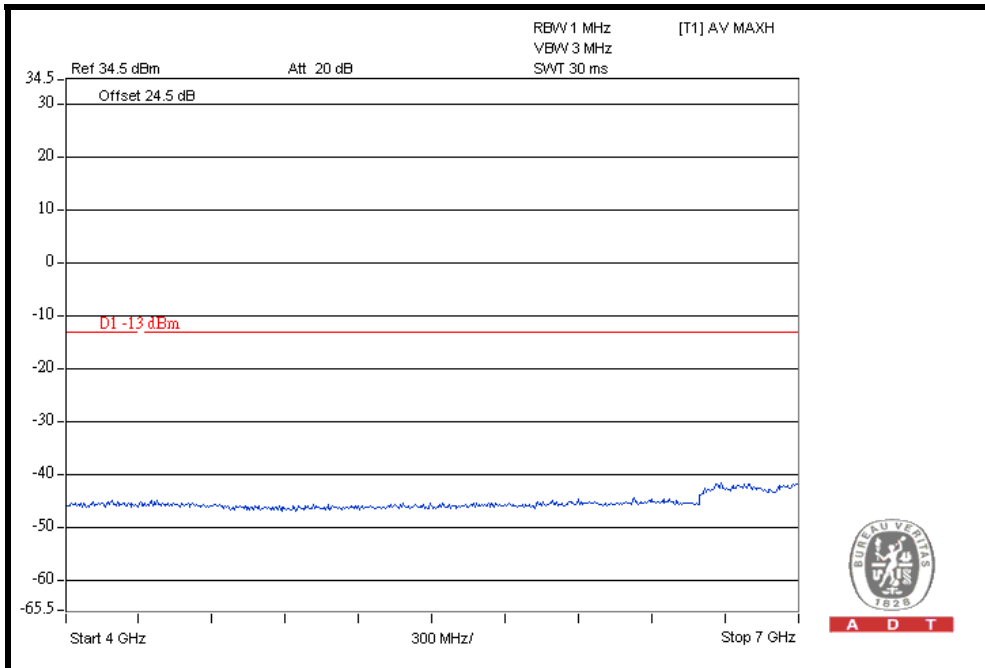
CH 23825: 1GHz ~ 4GHz



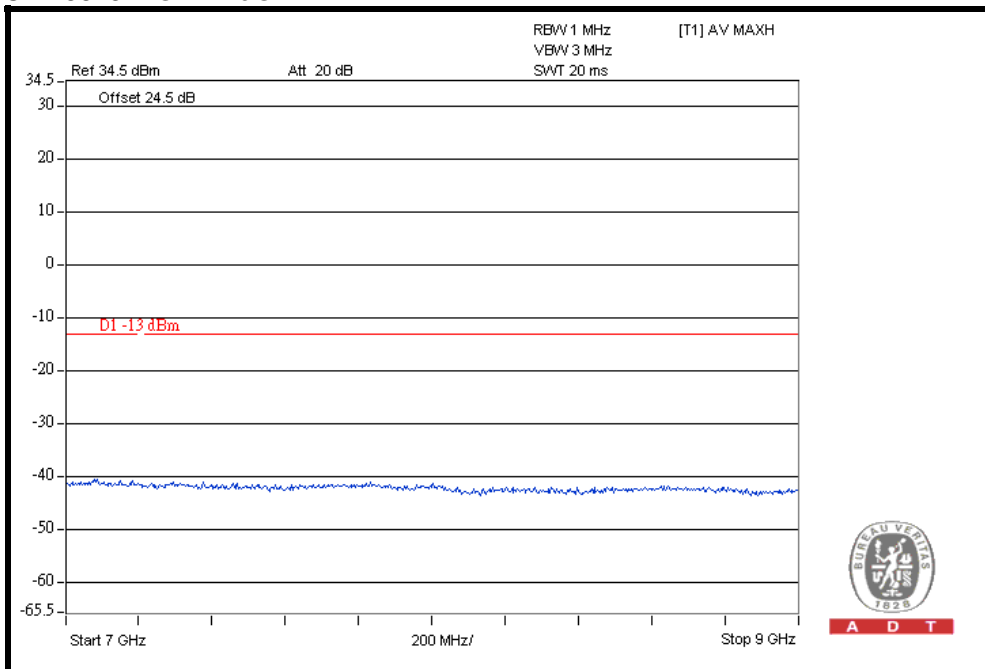


A D T

CH 23825: 4GHz ~ 7GHz



CH 23825: 7GHz ~ 9GHz



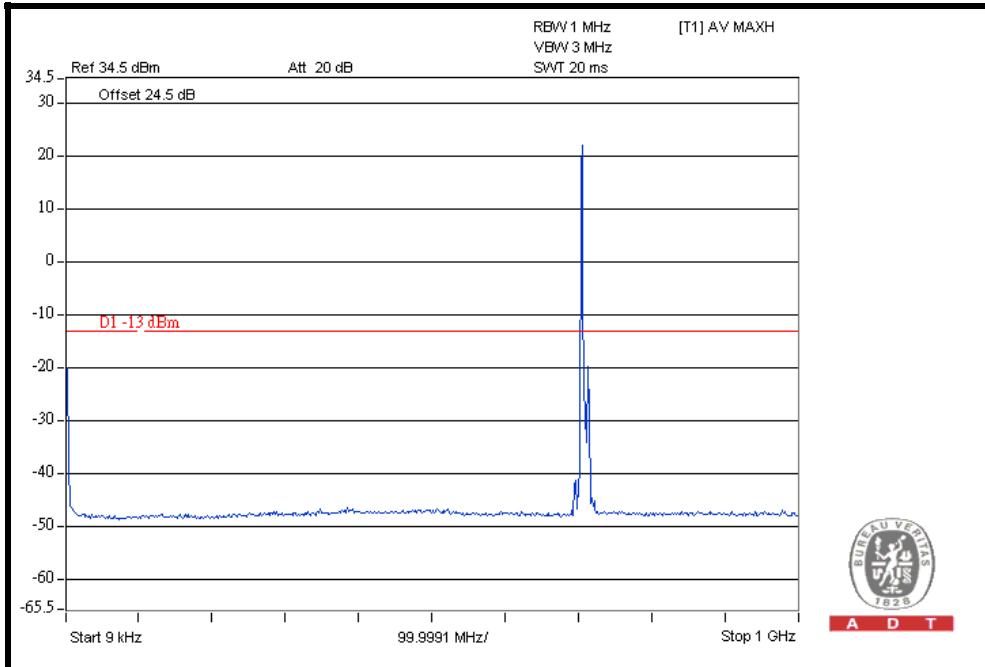


A D T

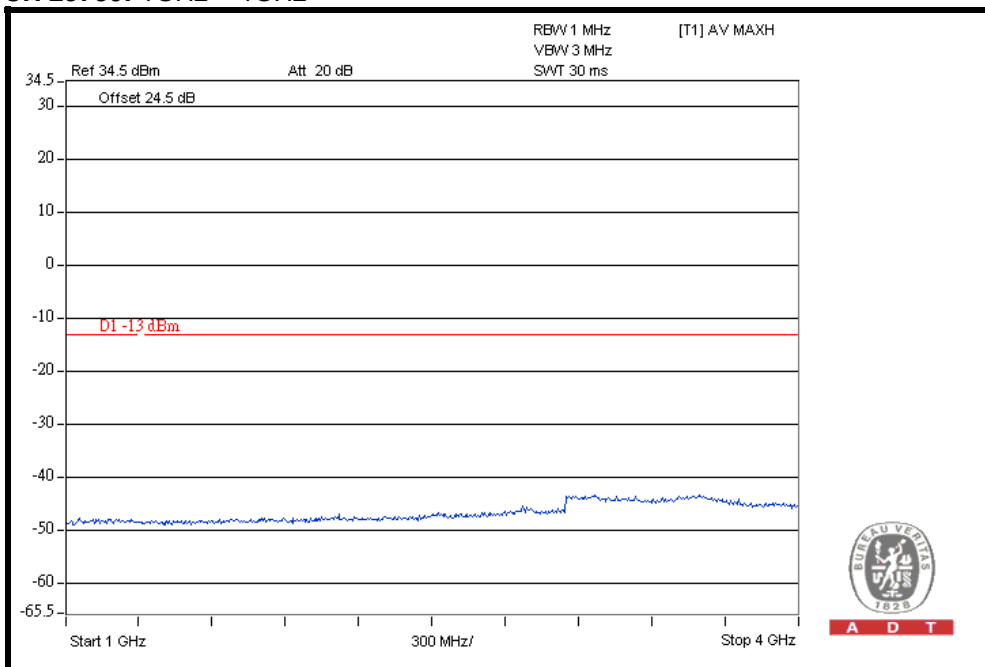
LTE Band 17

CHANNEL BANDWIDTH: 10MHz / 1 RB ALLOCATED AT THE LOWER EDGE

CH 23780: 9kHz ~ 1GHz



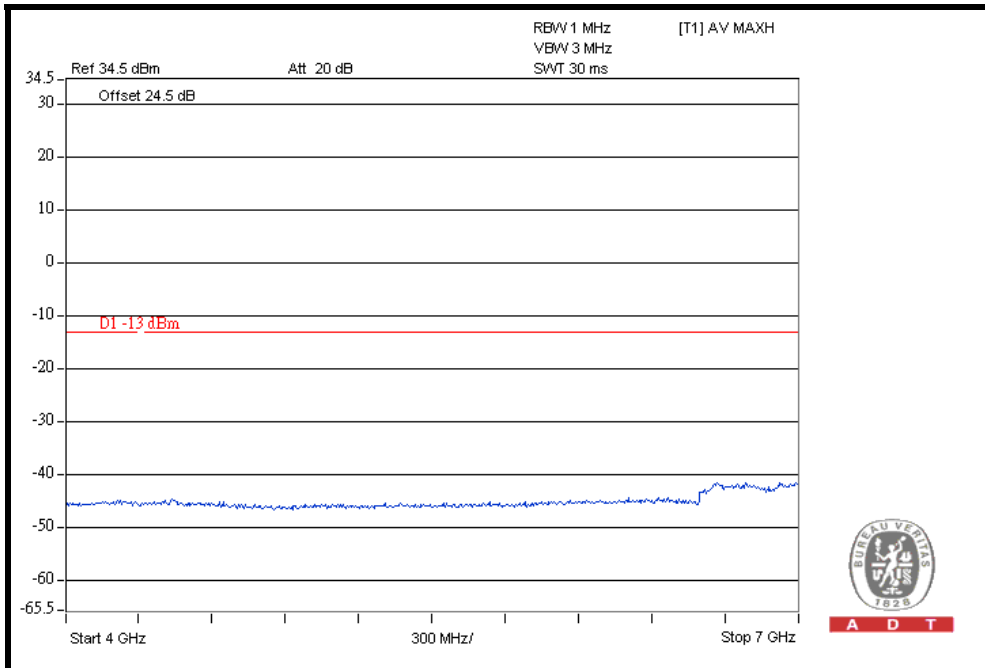
CH 23780: 1GHz ~ 4GHz



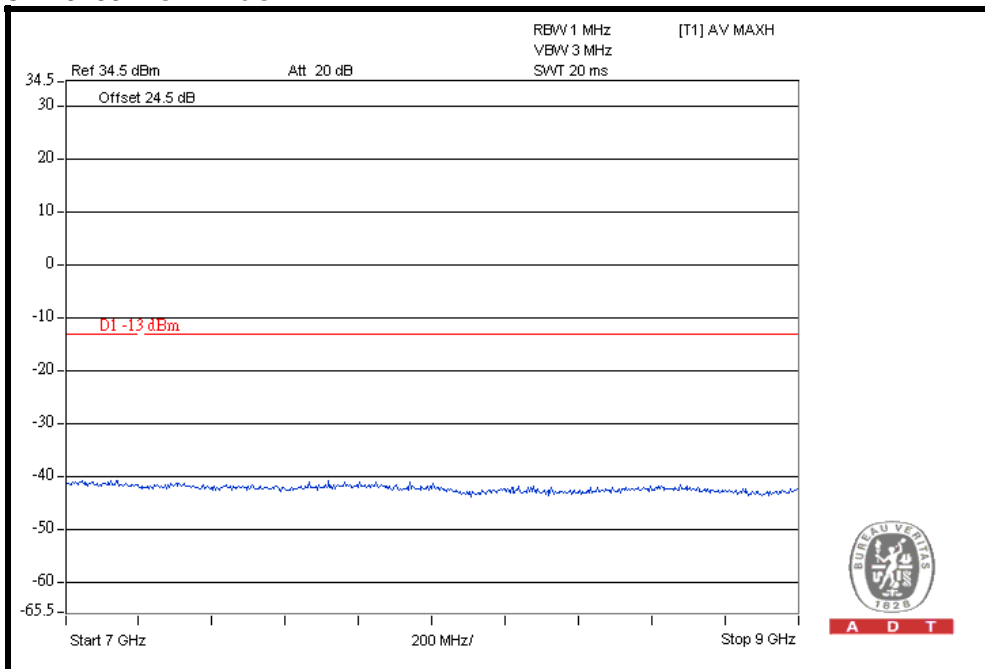


A D T

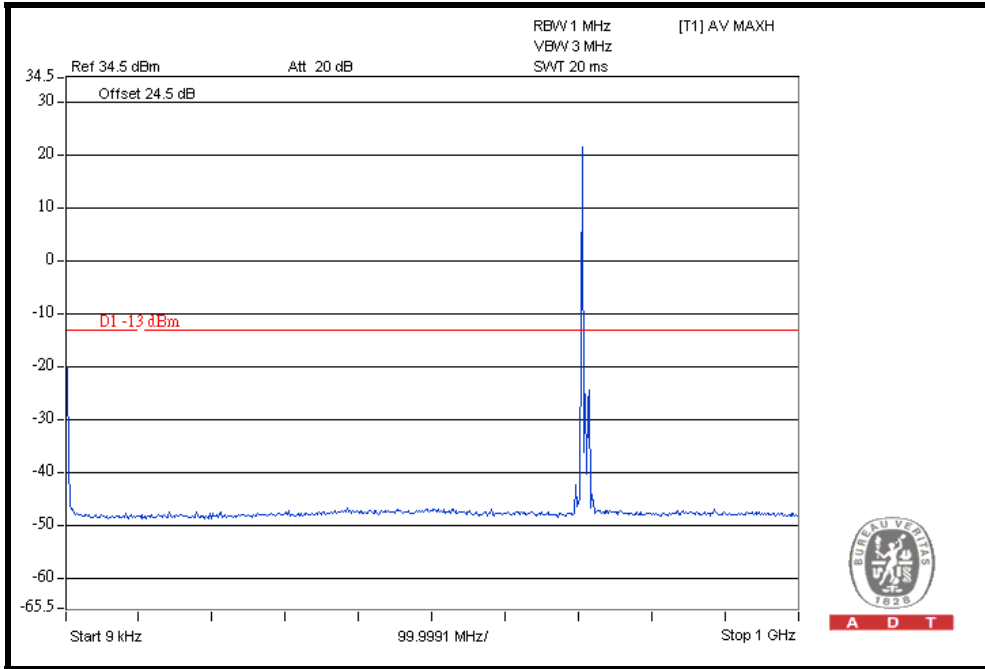
CH 23780: 4GHz ~ 7GHz



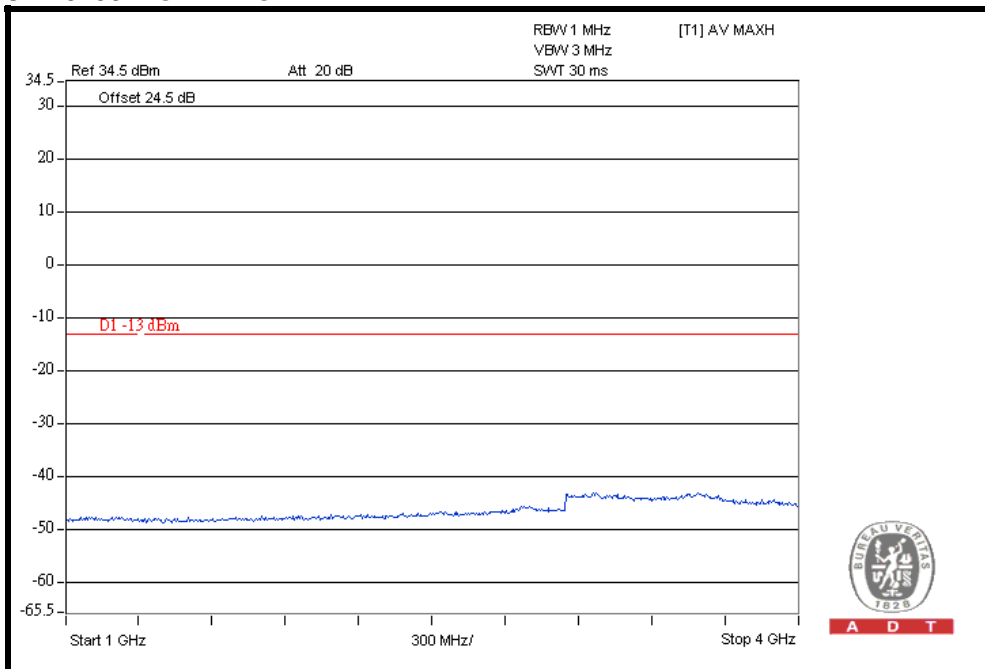
CH 23780: 7GHz ~ 9GHz



CH 23790: 9kHz ~ 1GHz



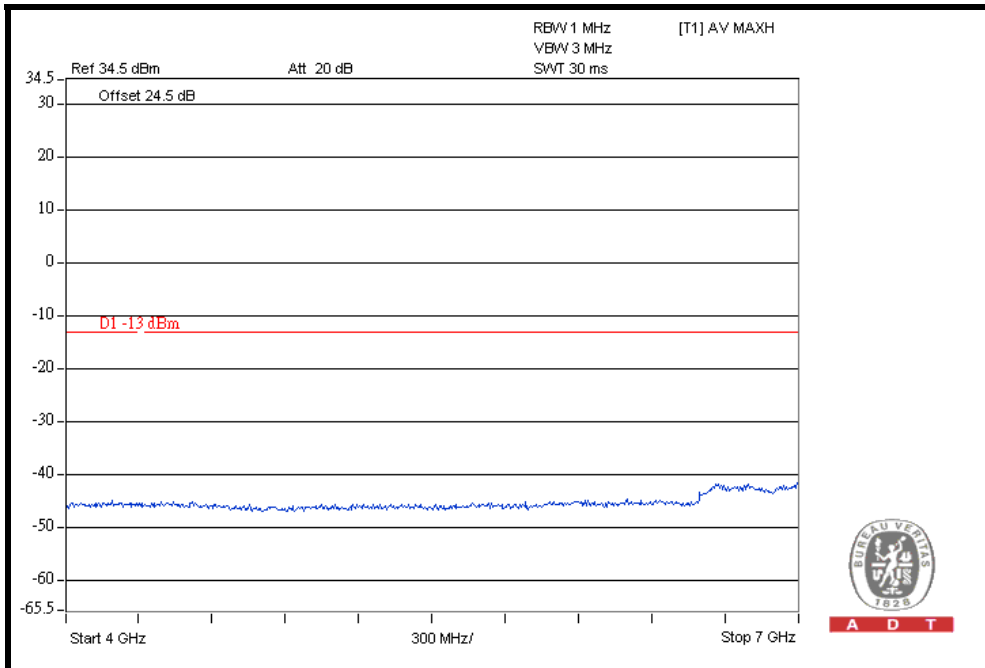
CH 23790: 1GHz ~ 4GHz



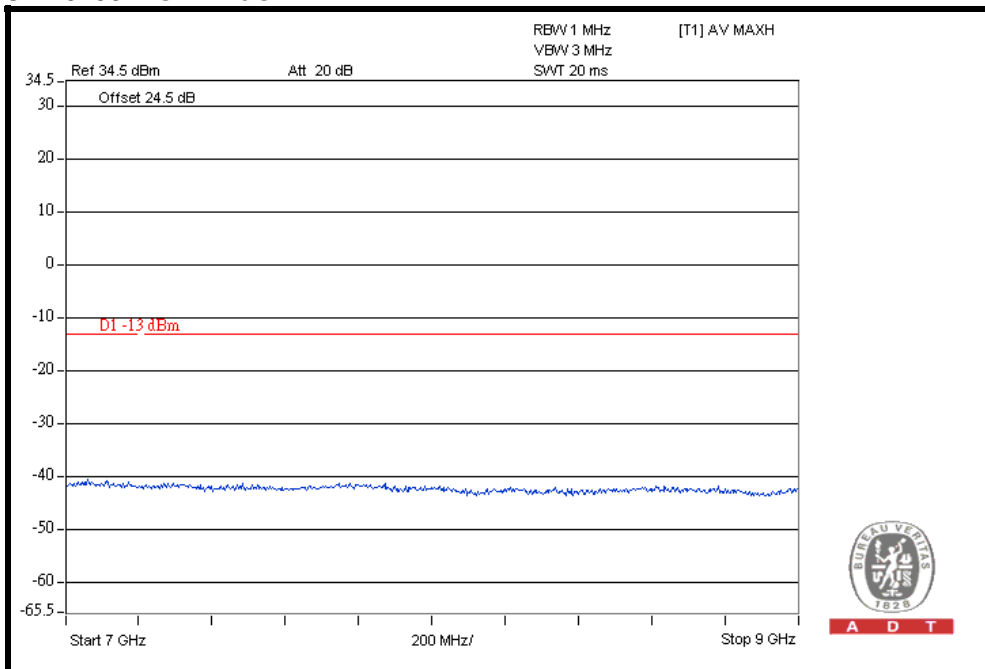


A D T

CH 23790: 4GHz ~ 7GHz



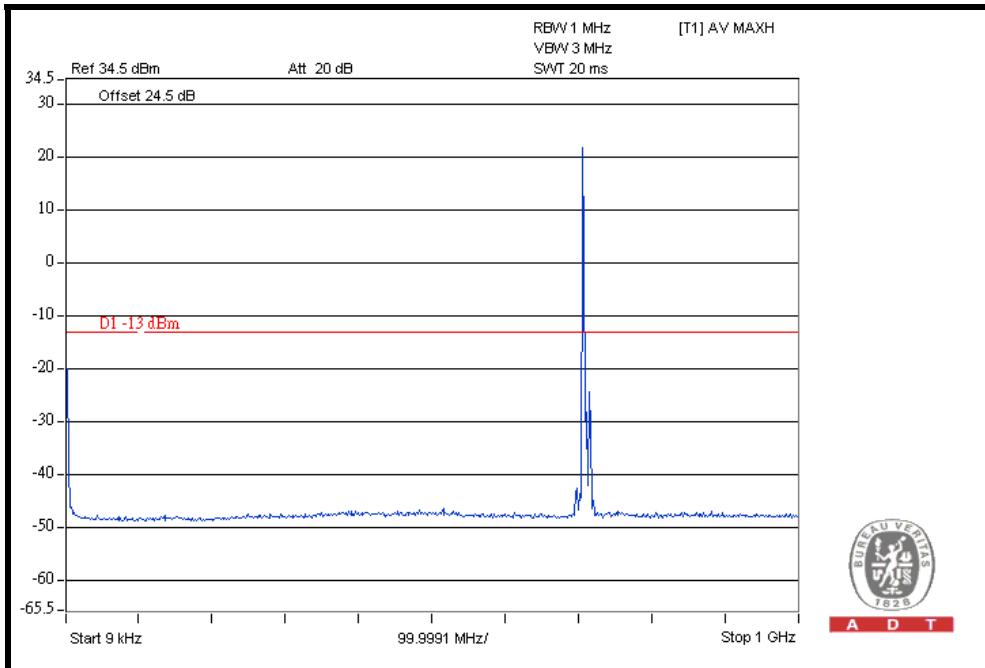
CH 23790: 7GHz ~ 9GHz



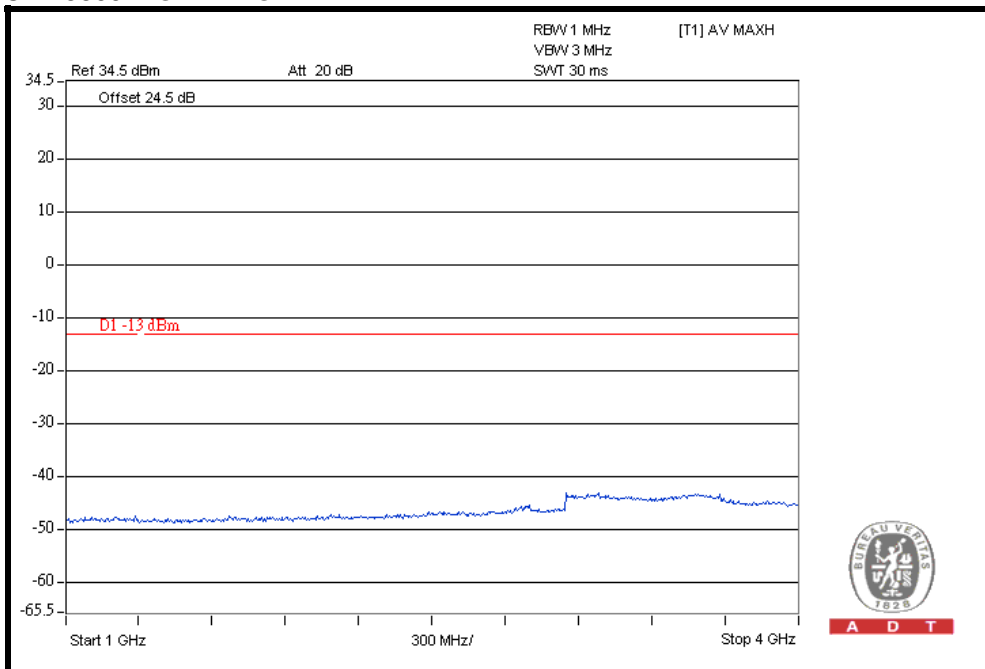


A D T

CH 23800: 9kHz ~ 1GHz



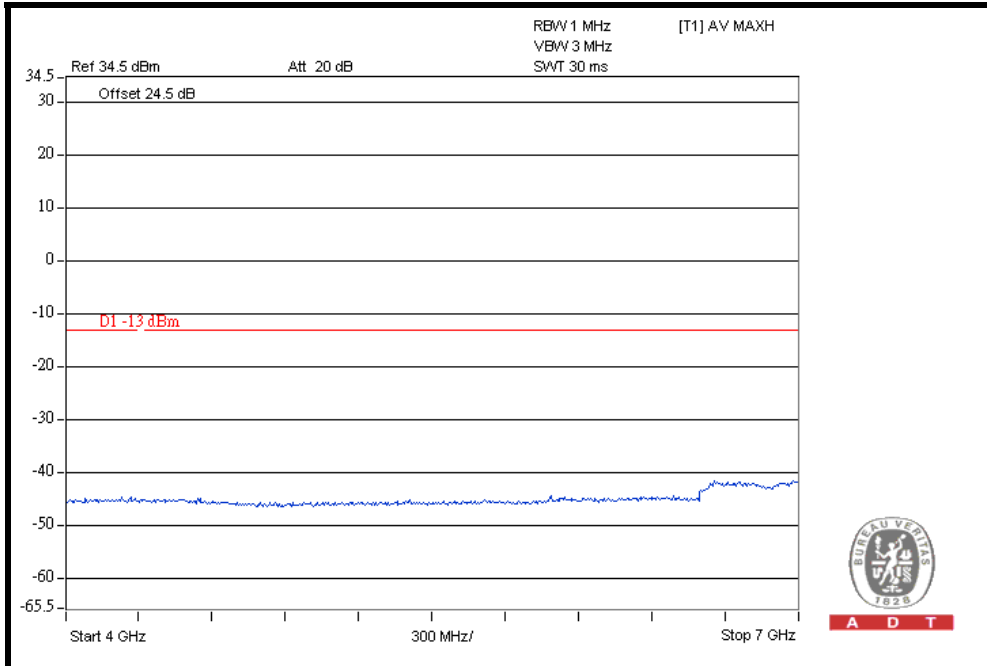
CH 23800: 1GHz ~ 4GHz



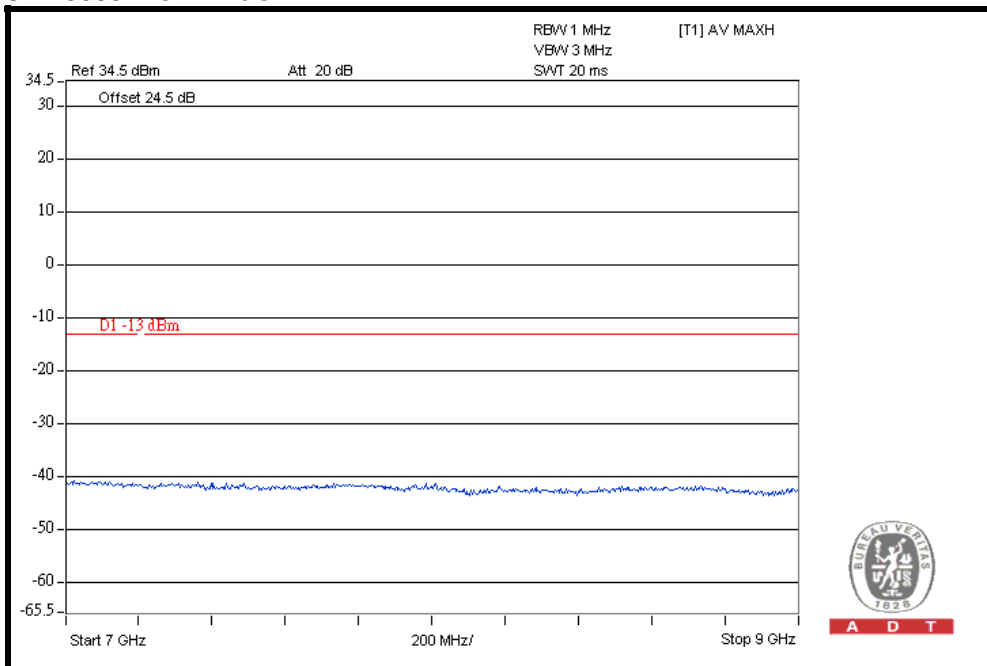


A D T

CH 23800: 4GHz ~ 7GHz



CH 23800: 7GHz ~ 9GHz



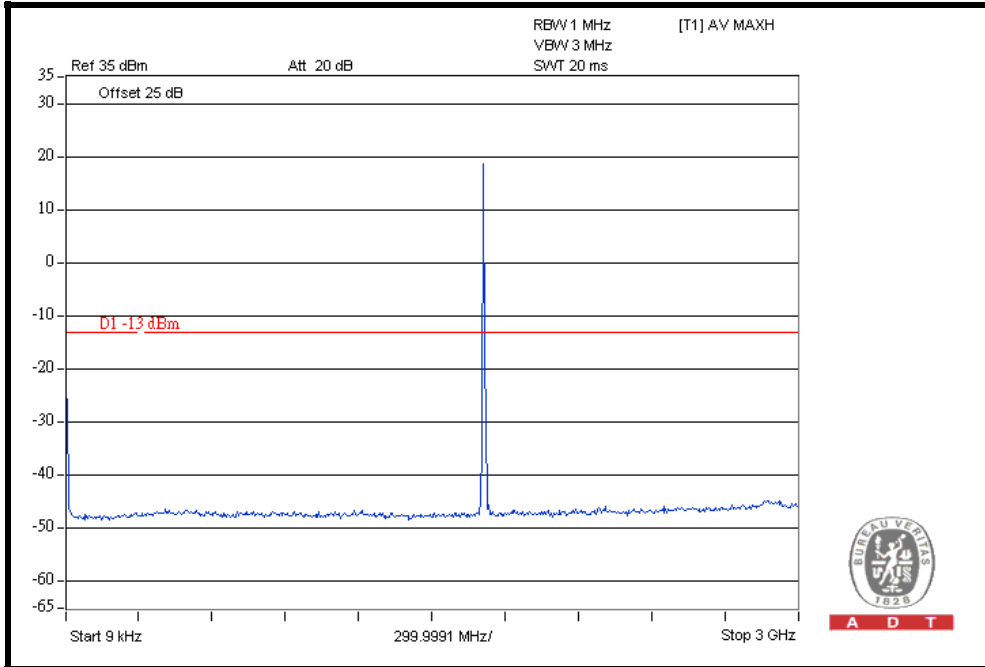


A D T

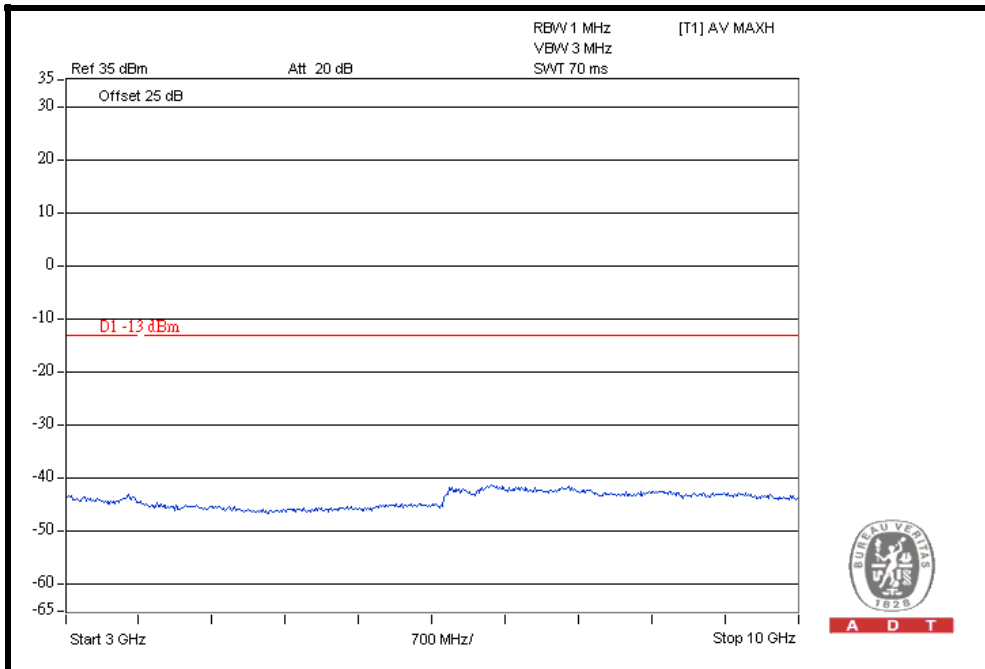
LTE Band 4

CHANNEL BANDWIDTH: 5MHz / 1 RB ALLOCATED AT THE LOWER EDGE

CH 19975: 9kHz ~ 3GHz



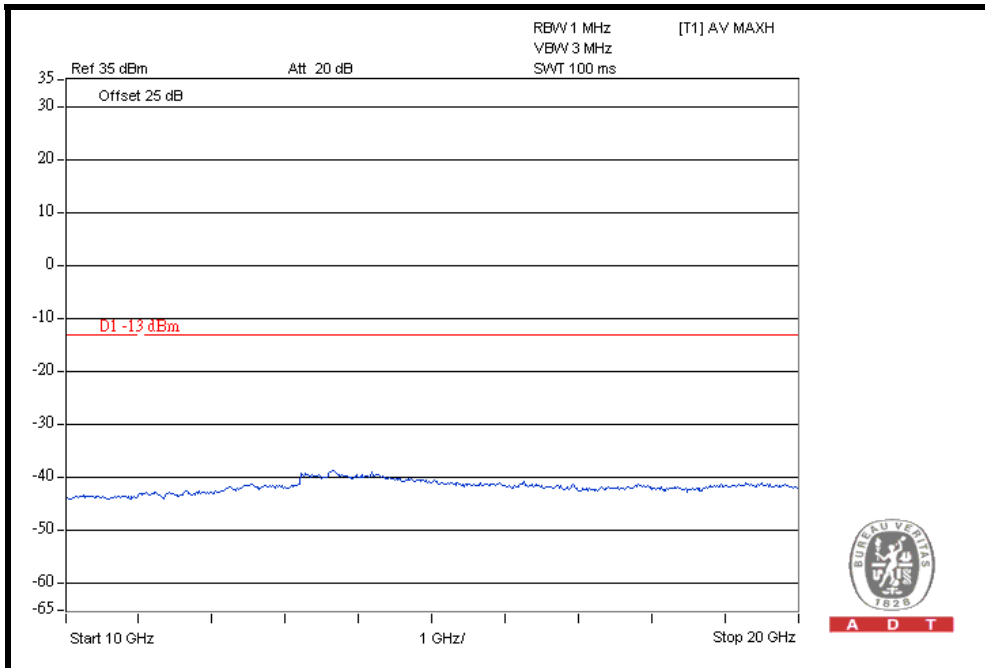
CH 19975: 3GHz ~ 10GHz



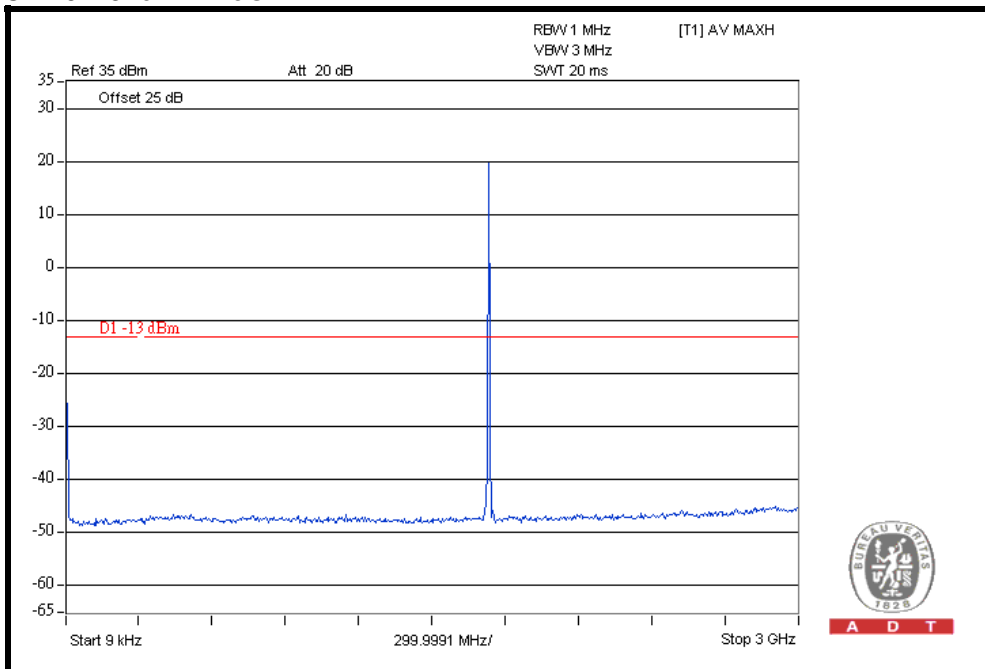


A D T

CH 19975: 10GHz ~ 20GHz



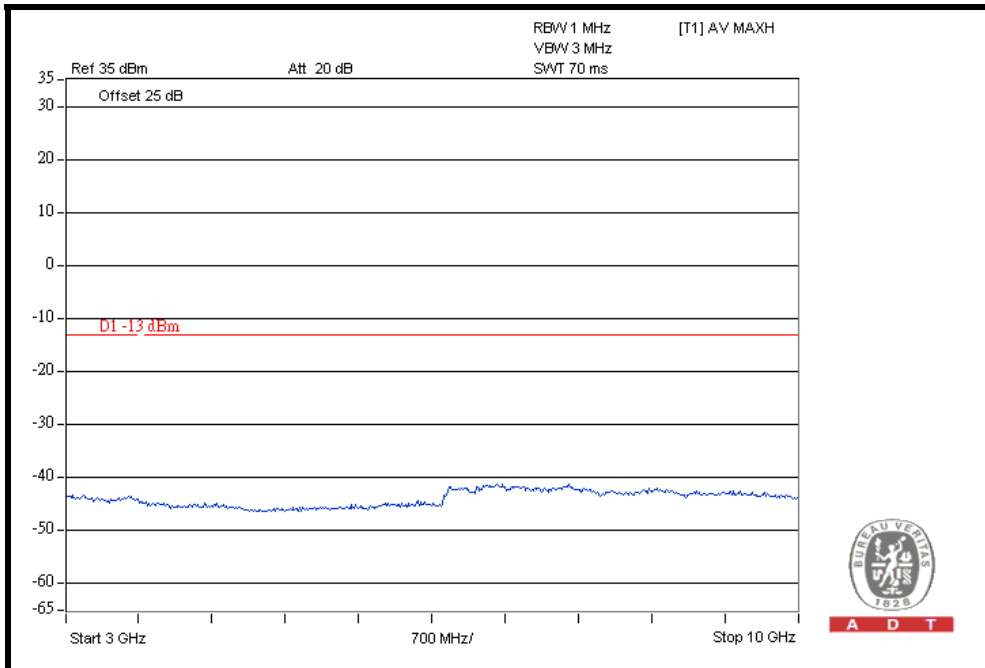
CH 20175: 9kHz ~ 3GHz



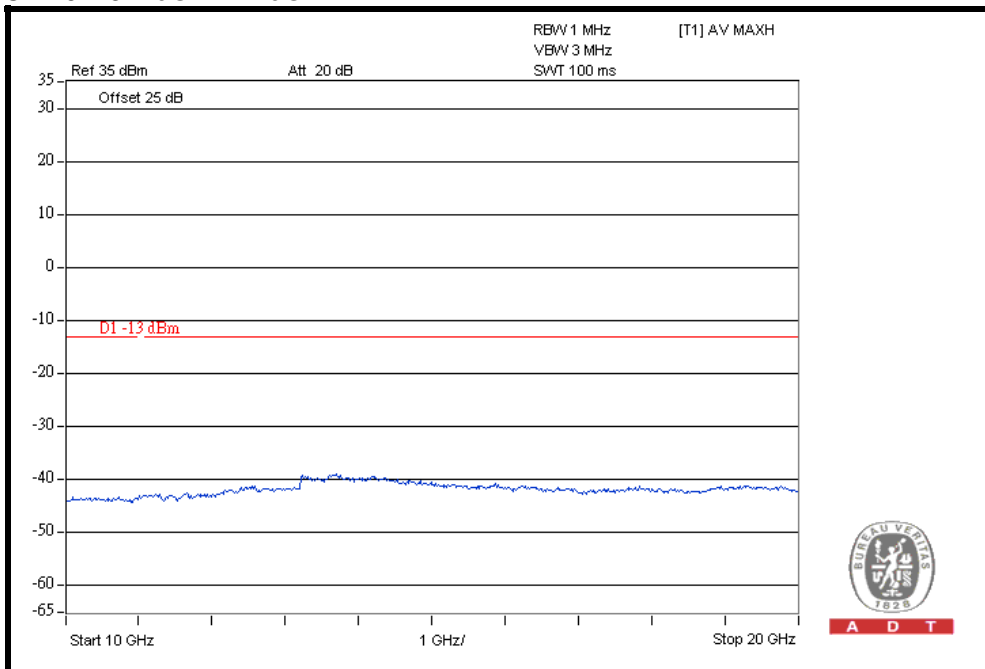


A D T

CH 20175: 3GHz ~ 10GHz



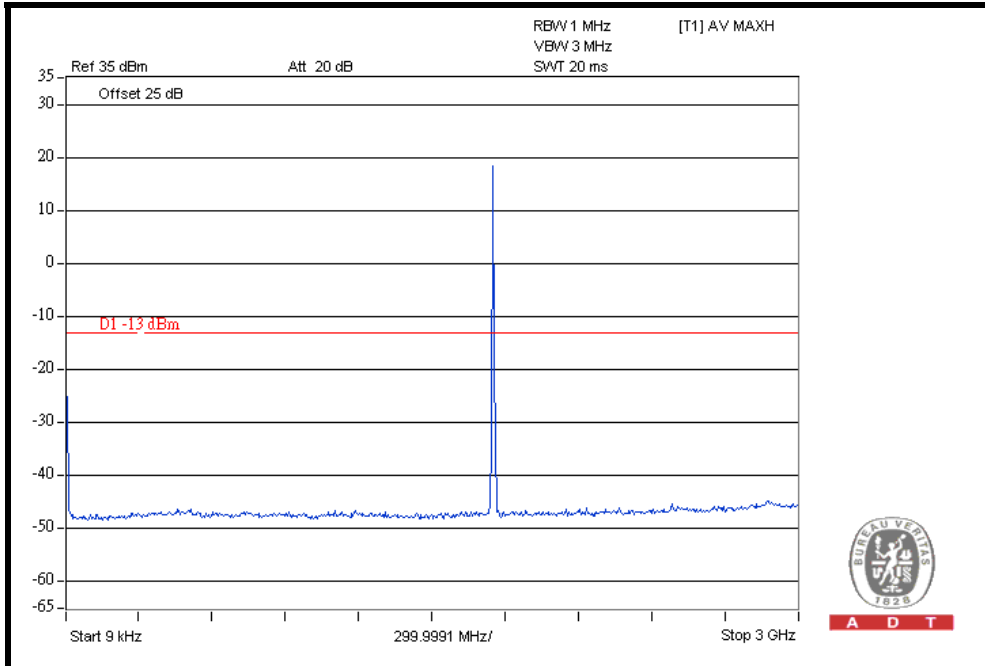
CH 20175: 10GHz ~ 20GHz



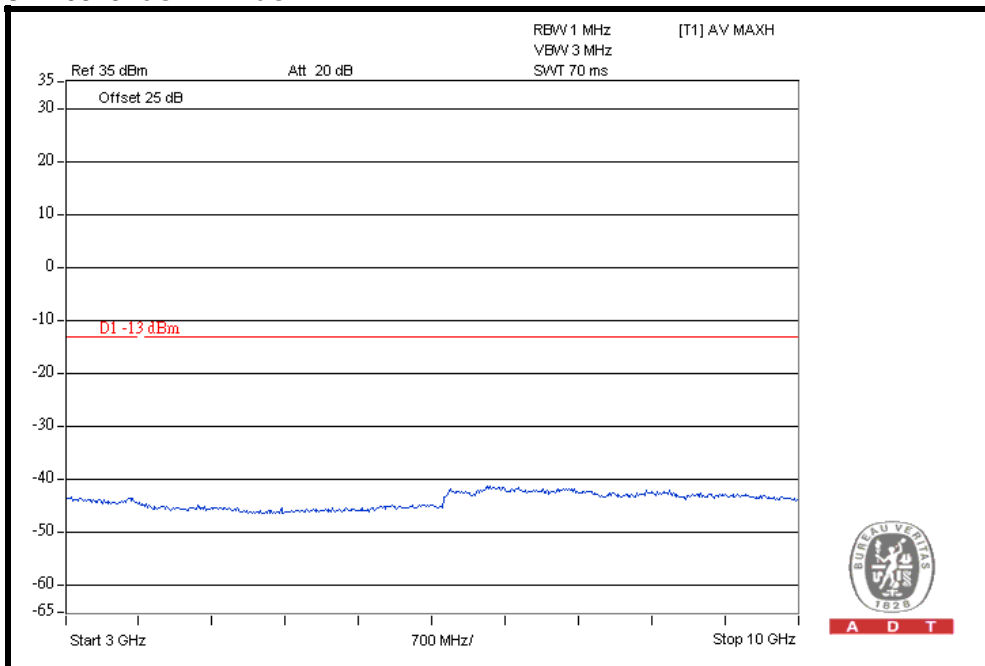


A D T

CH 20375: 9kHz ~ 3GHz



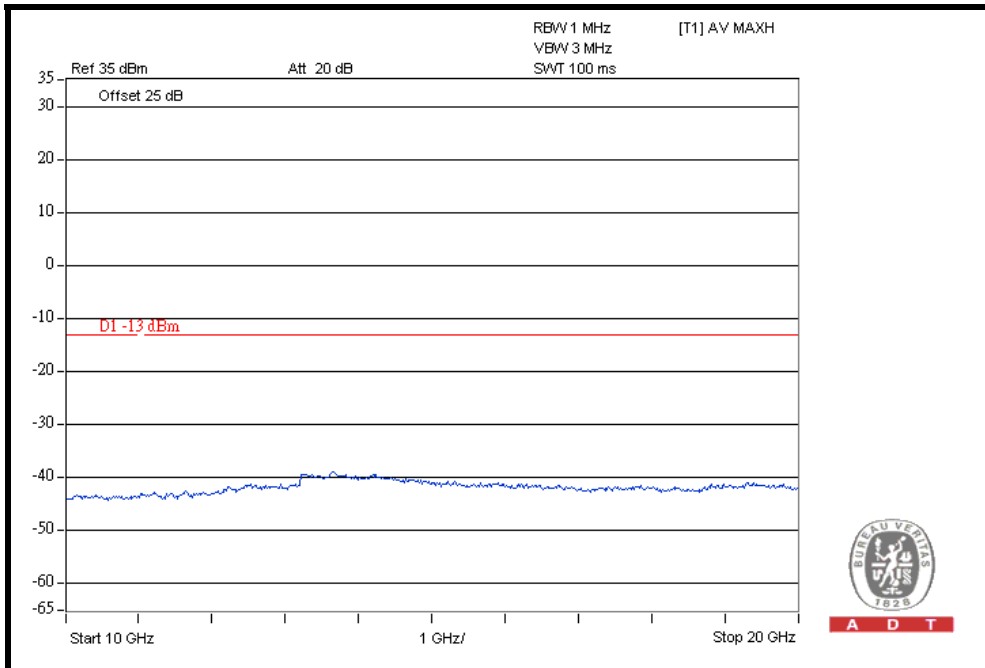
CH 20375: 3GHz ~ 10GHz





A D T

CH 20375: 10GHz ~ 20GHz



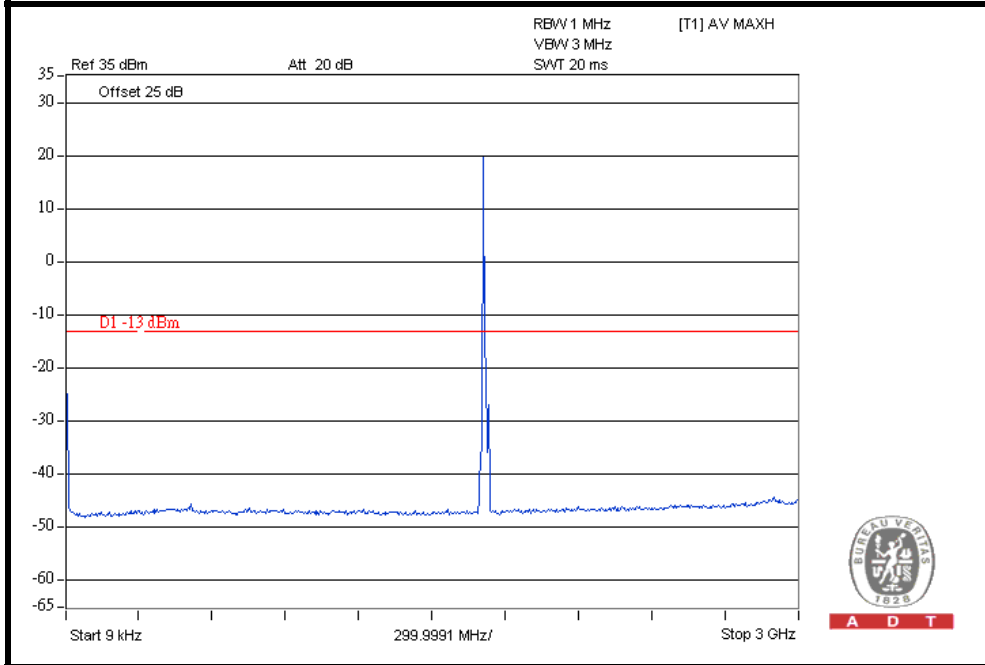


A D T

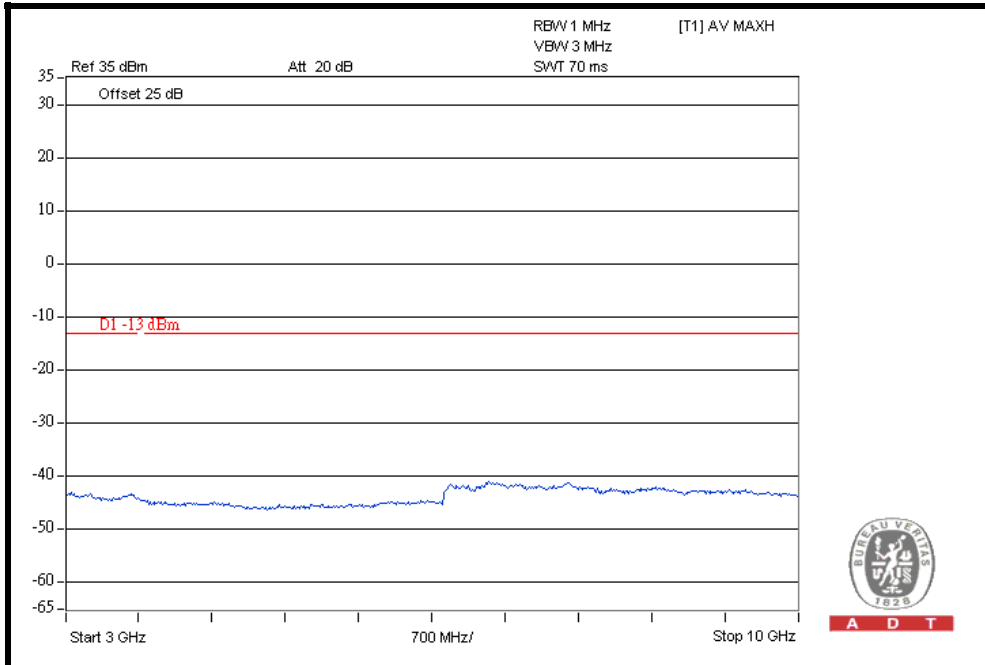
LTE Band 4

CHANNEL BANDWIDTH: 10MHz / 1 RB ALLOCATED AT THE LOWER EDGE

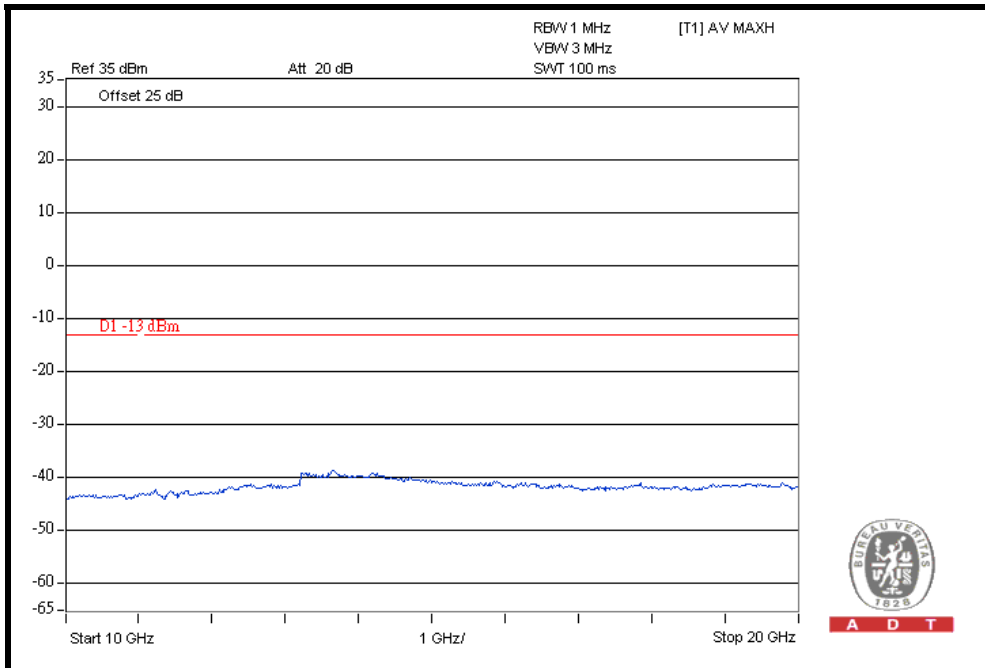
CH 20000: 9kHz ~ 3GHz



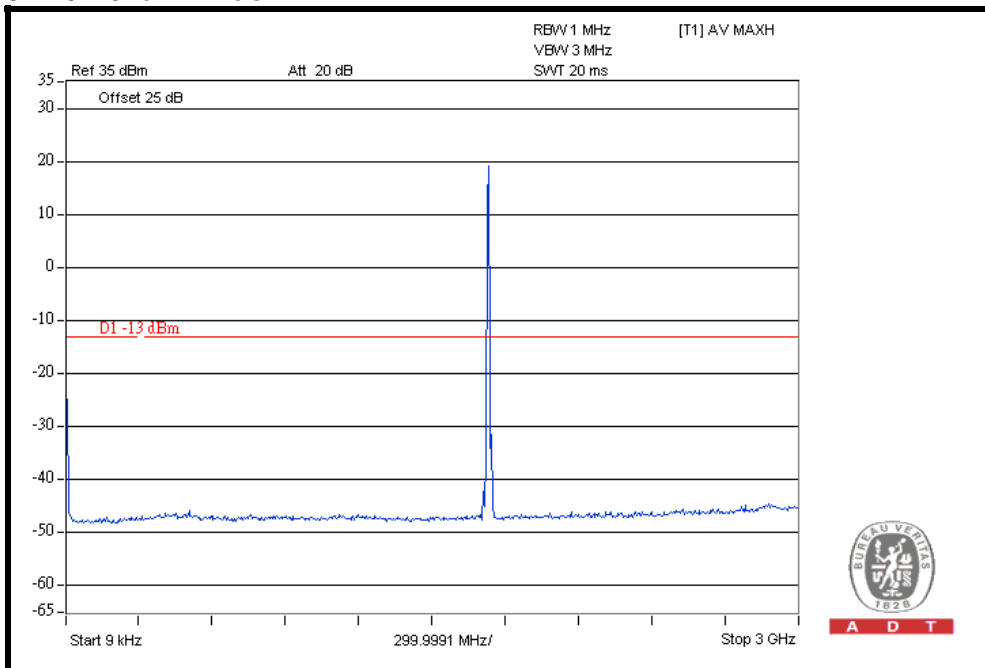
CH 20000: 3GHz ~ 10GHz



CH 20000: 10GHz ~ 20GHz



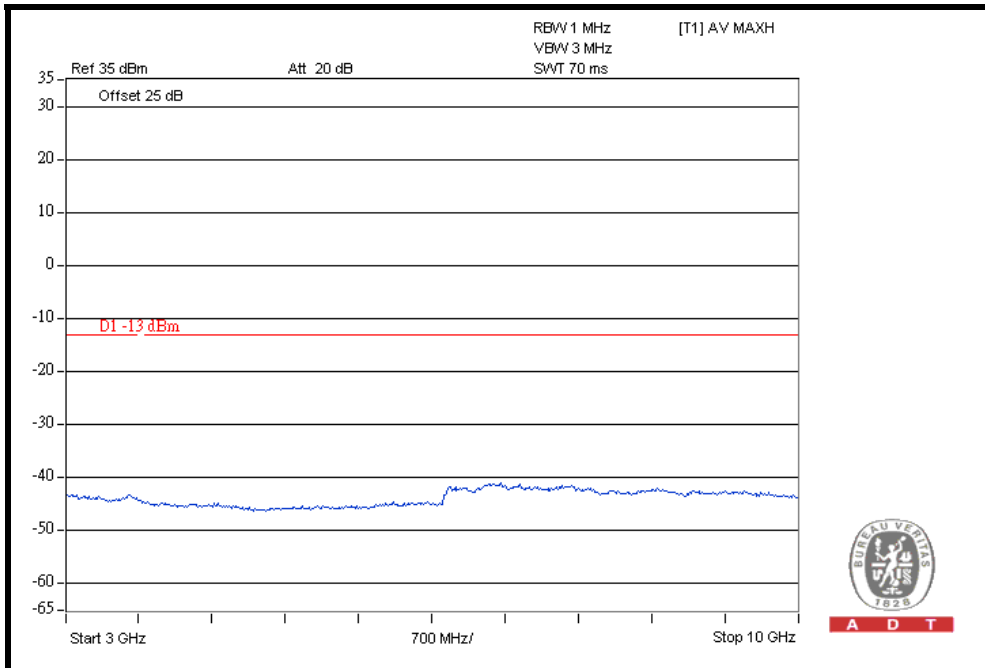
CH 20175: 9kHz ~ 3GHz



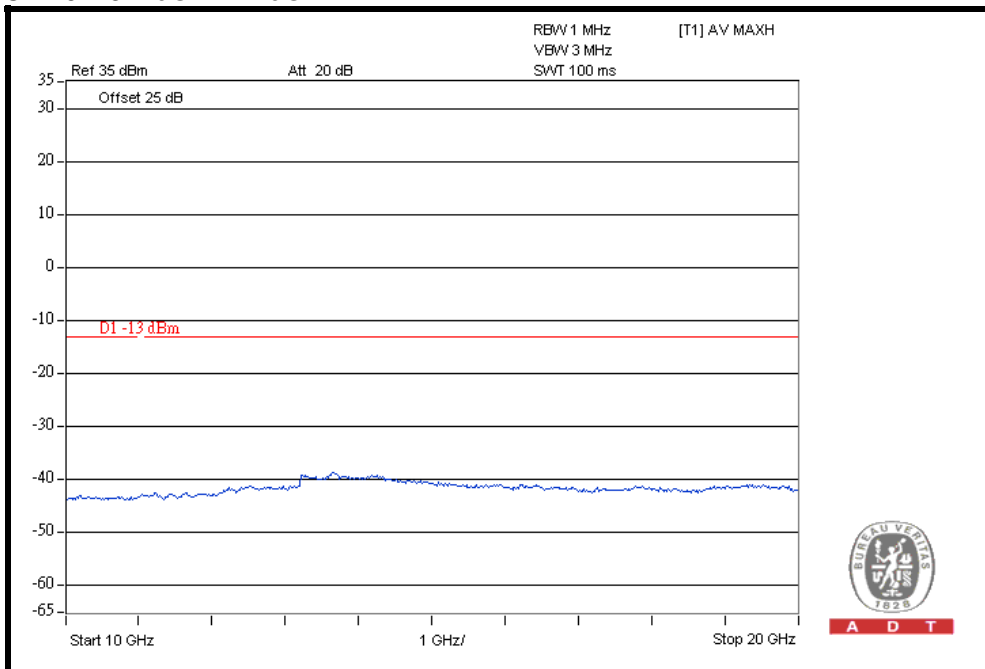


A D T

CH 20175: 3GHz ~ 10GHz



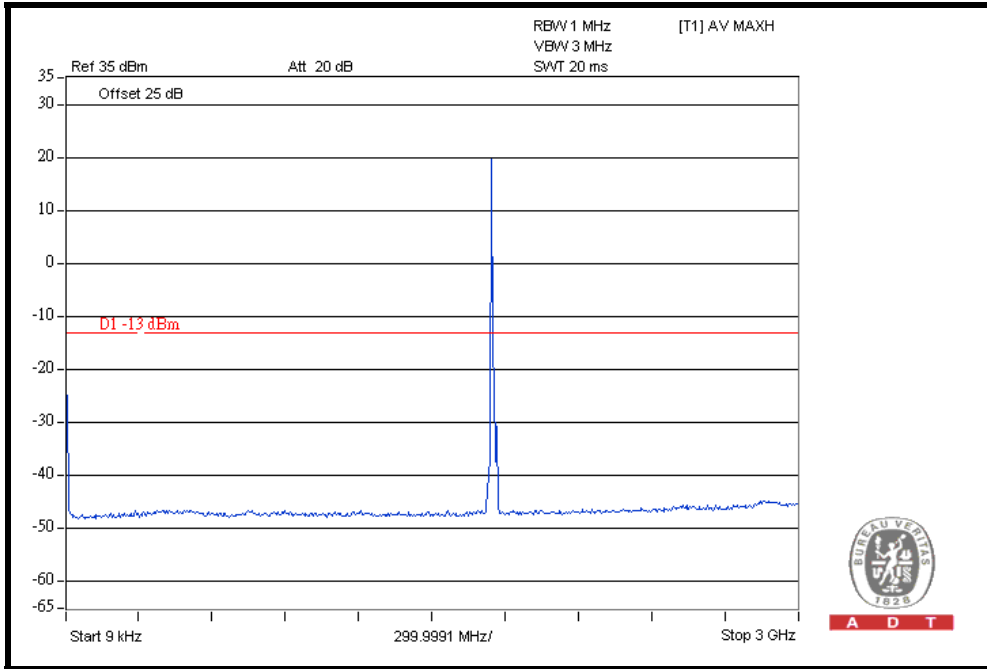
CH 20175: 10GHz ~ 20GHz



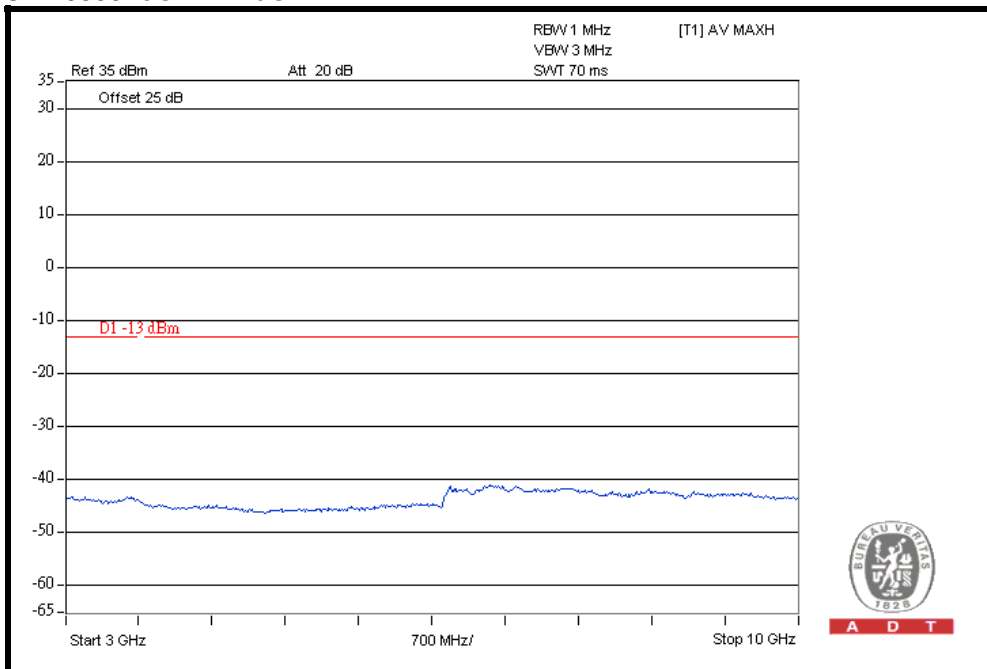


A D T

CH 20350: 9kHz ~ 3GHz



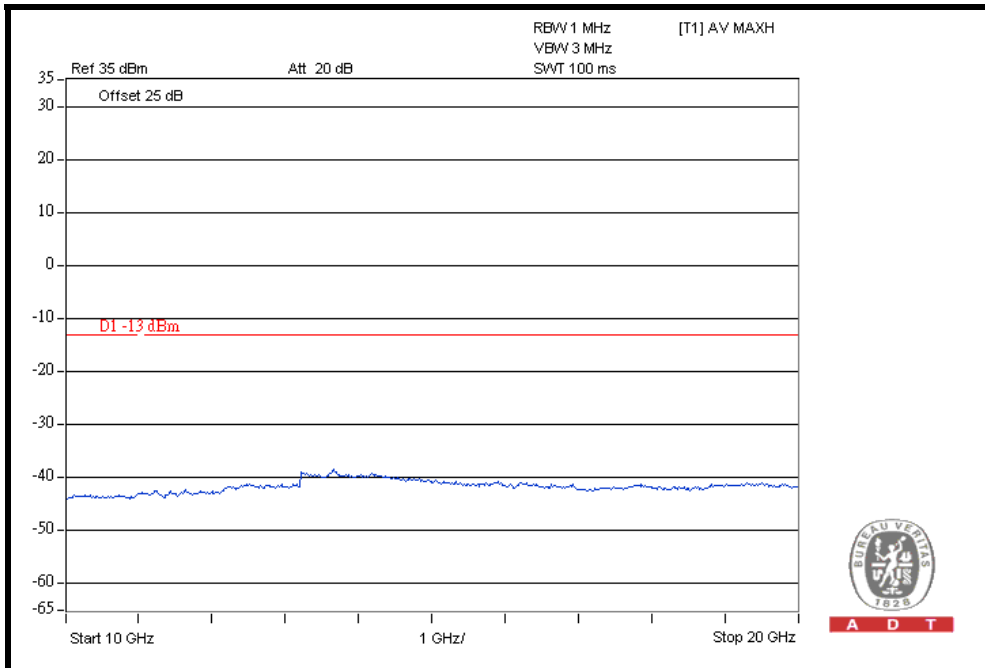
CH 20350: 3GHz ~ 10GHz





A D T

CH 20350: 10GHz ~ 20GHz



4.7 RADIATED EMISSION MEASUREMENT

4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

4.7.2 TEST INSTRUMENTS

Same as 4.1.2.

4.7.3 TEST PROCEDURES

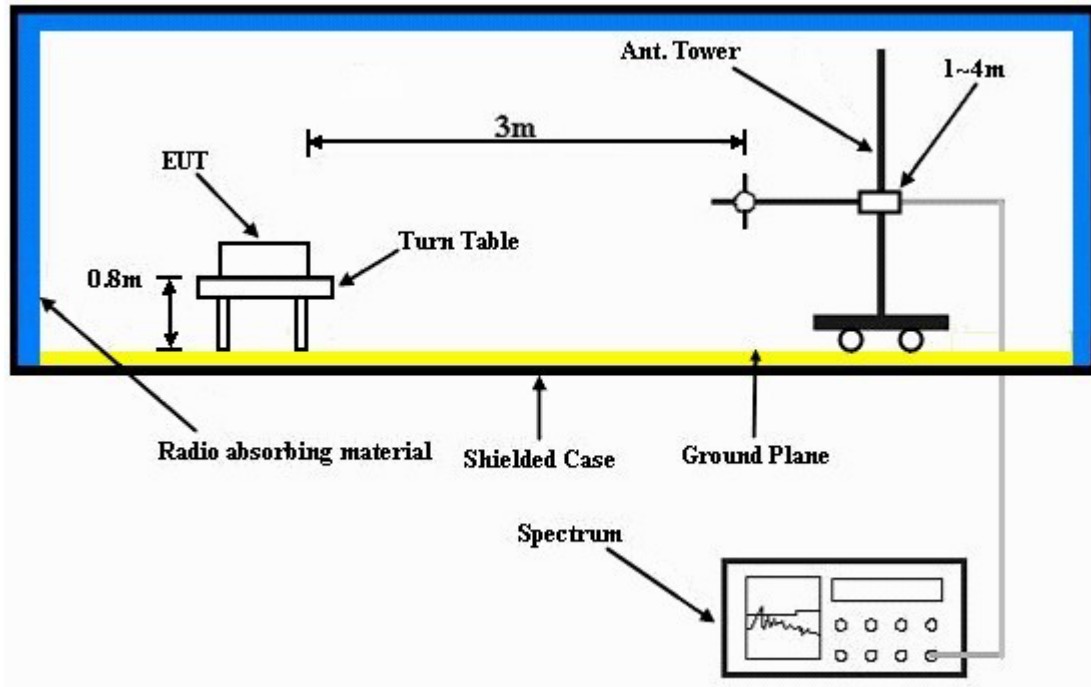
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The " Read Value " is the spectrum reading the maximum power value.
- b. 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15\text{dBi.}$

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

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



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

4.7.6 EUT OPERATING CONDITIONS

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

4.7.7 TEST RESULTS

Below 1GHz

LTE Band 17

CHANNEL BANDWIDTH: 5MHz / 1 RB ALLOCATED AT THE LOWER EDGE

MODE	Mid. channel	FREQUENCY RANGE	Below 1000MHz
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	86.37	48.3	-13.0	-38.1	-7.7	-45.8
2	127.19	51.1	-13.0	-35.5	-7.7	-43.2
3	185.51	48.5	-13.0	-37.8	-7.7	-45.5
4	236.05	46.0	-13.0	-41.0	-7.7	-48.7
5	311.86	45.6	-13.0	-41.3	-7.8	-49.1
6	352.69	46.0	-13.0	-41.3	-7.8	-49.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	41.66	44.7	-13.0	-42.2	-7.7	-49.9
2	86.37	45.7	-13.0	-41.4	-7.7	-49.1
3	133.03	48.2	-13.0	-38.6	-7.7	-46.3
4	185.51	44.1	-13.0	-42.7	-7.7	-50.4
5	234.11	43.7	-13.0	-42.5	-7.7	-50.2
6	335.19	45.1	-13.0	-42.0	-7.8	-49.8

REMARKS: 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).

2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

MODE	Mid. channel	FREQUENCY RANGE	Below 1000MHz
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	86.37	39.97	-13.0	-47.3	-7.7	-55.0
2	125.25	48.96	-13.0	-37.9	-7.7	-45.6
3	150.52	49.48	-13.0	-37.1	-7.7	-44.8
4	241.88	47.14	-13.0	-39.5	-7.7	-47.2
5	290.48	45.01	-13.0	-41.4	-7.7	-49.1
6	362.40	45.31	-13.0	-41.0	-7.8	-48.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	43.61	42.43	-13.0	-45.0	-7.7	-52.7
2	150.52	46.62	-13.0	-39.9	-7.7	-47.6
3	272.99	39.00	-13.0	-48.4	-7.7	-56.1
4	329.36	43.13	-13.0	-43.5	-7.8	-51.3
5	445.99	35.92	-13.0	-50.9	-7.8	-58.7
6	539.30	36.66	-13.0	-50.0	-7.8	-57.8

REMARKS: 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



CHANNEL BANDWIDTH: 10MHz / 1 RB ALLOCATED AT THE LOWER EDGE

MODE	Mid. channel	FREQUENCY RANGE	Below 1000MHz
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	86.37	44.2	-13.0	-42.2	-7.7	-49.9
2	127.19	51.3	-13.0	-34.9	-7.7	-42.6
3	183.57	49.1	-13.0	-38.1	-7.7	-45.8
4	243.83	45.7	-13.0	-41.0	-7.7	-48.7
5	313.81	45.0	-13.0	-41.3	-7.8	-49.1
6	463.49	37.0	-13.0	-50.2	-7.8	-58.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	86.37	44.3	-13.0	-42.5	-7.7	-50.2
2	131.08	47.6	-13.0	-39.0	-7.7	-46.7
3	187.45	44.6	-13.0	-41.6	-7.7	-49.3
4	238.00	41.5	-13.0	-45.5	-7.7	-53.2
5	313.81	43.3	-13.0	-43.1	-7.8	-50.9
6	337.13	43.7	-13.0	-42.9	-7.8	-50.7

REMARKS: 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
 2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



LTE Band 4

CHANNEL BANDWIDTH: 5MHz / 1 RB ALLOCATED AT THE LOWER EDGE

MODE	Low channel	FREQUENCY RANGE	Below 1000MHz
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	127.19	51.7	-13.0	-34.9	-7.7	-42.6
2	187.45	49.7	-13.0	-37.5	-7.7	-45.2
3	238.00	45.1	-13.0	-41.7	-7.7	-49.4
4	350.74	44.7	-13.0	-41.9	-7.8	-49.7
5	424.61	37.5	-13.0	-49.2	-7.8	-57.0
6	463.49	36.5	-13.0	-50.3	-7.8	-58.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	41.66	49.0	-13.0	-37.9	-7.7	-45.6
2	88.32	45.0	-13.0	-41.1	-7.7	-48.8
3	133.03	46.7	-13.0	-40.6	-7.7	-48.3
4	187.45	44.4	-13.0	-42.1	-7.7	-49.8
5	236.05	41.1	-13.0	-45.9	-7.7	-53.6
6	341.02	42.1	-13.0	-44.9	-7.8	-52.7

REMARKS: 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).

2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



MODE	Low channel	FREQUENCY RANGE	Below 1000MHz
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	127.19	51.54	-13.0	-35.4	-7.7	-43.1
2	148.58	51.28	-13.0	-35.4	-7.7	-43.1
3	241.88	50.61	-13.0	-36.7	-7.7	-44.4
4	342.97	49.01	-13.0	-37.9	-7.8	-45.7
5	368.24	49.49	-13.0	-36.5	-7.8	-44.3
6	624.83	35.88	-13.0	-51.1	-7.8	-58.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	41.66	42.83	-13.0	-43.7	-7.7	-51.4
2	80.54	42.76	-13.0	-43.9	-7.7	-51.6
3	121.36	46.64	-13.0	-40.5	-7.7	-48.2
4	150.52	49.23	-13.0	-37.8	-7.7	-45.5
5	329.36	47.08	-13.0	-39.7	-7.8	-47.5
6	444.05	39.51	-13.0	-46.7	-7.8	-54.5

REMARKS: 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
 2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



CHANNEL BANDWIDTH: 10MHz / 1 RB ALLOCATED AT THE LOWER EDGE

MODE	Mid. channel	FREQUENCY RANGE	Below 1000MHz
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBUV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	86.37	47.8	-13.0	-38.6	-7.7	-46.3
2	127.19	51.6	-13.0	-34.7	-7.7	-42.4
3	183.57	49.0	-13.0	-38.1	-7.7	-45.8
4	234.11	45.1	-13.0	-42.1	-7.7	-49.8
5	315.75	45.1	-13.0	-41.6	-7.8	-49.4
6	358.52	44.8	-13.0	-42.1	-7.8	-49.9

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBUV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	41.66	44.3	-13.0	-42.8	-7.7	-50.5
2	86.37	45.4	-13.0	-41.4	-7.7	-49.1
3	133.03	48.5	-13.0	-38.2	-7.7	-45.9
4	187.45	44.0	-13.0	-42.5	-7.7	-50.2
5	236.05	42.2	-13.0	-44.1	-7.7	-51.8
6	335.19	43.9	-13.0	-43.4	-7.8	-51.2

- REMARKS:** 1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
 2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Above 1GHz
LTE Band 17

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

MODE		Low channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1413.0	-52.9	-13.0	-57.4	7.7	-51.9
2	2119.5	-58.7	-13.0	-58.6	8.3	-52.5
3	2826.0	-62.6	-13.0	-62.2	9.9	-54.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1413.0	-53.8	-13.0	-59.2	7.7	-53.7
2	2119.5	-61.0	-13.0	-60.1	8.3	-54.0
3	2826.0	-62.5	-13.0	-61.9	9.9	-54.2

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB

MODE		Low channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1413	-52.5	-13.0	-57.0	7.7	-51.5
2	2119.5	-61.8	-13.0	-61.7	8.3	-55.6
3	2826	-62.3	-13.0	-61.9	9.9	-54.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1413	-51.7	-13.0	-57.1	7.7	-51.6
2	2119.5	-60.3	-13.0	-59.4	8.3	-53.3
3	2826	-62.2	-13.0	-61.6	9.9	-53.9

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
 Correction Factor = gain of substitution antenna + cable loss



A D T

CHANNEL BANDWIDTH: 5MHz / QPSK / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Mid. channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1415.6	-45.3	-13.0	-49.8	7.7	-44.3
2	2123.4	-53.6	-13.0	-53.5	8.3	-47.4
3	2831.2	-62.8	-13.0	-62.4	9.9	-54.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1415.6	-48.8	-13.0	-54.2	7.7	-48.7
2	2123.4	-57.1	-13.0	-56.2	8.3	-50.1
3	2831.2	-63.3	-13.0	-62.7	9.9	-55.0

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Mid. channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1408.6	-47.1	-13.0	-51.6	7.7	-46.1
2	2112.9	-59.0	-13.0	-58.9	8.3	-52.8
3	2817.2	-62.6	-13.0	-62.2	9.9	-54.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1408.6	-45.1	-13.0	-50.5	7.7	-45.0
2	2112.9	-58.0	-13.0	-57.1	8.3	-51.0
3	2817.2	-62.8	-13.0	-62.2	9.9	-54.5

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Correction Factor = gain of substitution antenna + cable loss

CHANNEL BANDWIDTH: 5MHz / QPSK / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Mid. channel		TEST MODE		B
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1415.67	-48.9	-13.0	-53.4	7.7	-47.9
2	2123.51	-56.0	-13.0	-55.9	8.3	-49.8
3	2831.34	-62.8	-13.0	-62.4	9.9	-54.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1415.67	-47.3	-13.0	-52.7	7.7	-47.2
2	2123.51	-58.1	-13.0	-57.2	8.3	-51.1
3	2831.34	-62.7	-13.0	-62.1	9.9	-54.4

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
Correction Factor = gain of substitution antenna + cable loss

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

MODE		High channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1422	-61.1	-13.0	-65.6	7.7	-60.1
2	2133	-63.8	-13.0	-63.7	8.3	-57.6
3	2844	-63.1	-13.0	-62.7	9.9	-55.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1422	-53.8	-13.0	-59.2	7.7	-53.7
2	2133	-61.0	-13.0	-60.1	8.3	-54.0
3	2844	-62.5	-13.0	-61.9	9.9	-54.2

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB

MODE		Mid. channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1420	-58.1	-13.0	-62.6	7.7	-57.1
2	2130	-63.6	-13.0	-63.5	8.3	-57.4
3	2840	-63.6	-13.0	-63.2	9.9	-55.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1420	-57.2	-13.0	-62.6	7.7	-57.1
2	2130	-62.9	-13.0	-62.0	8.3	-55.9
3	2840	-63.9	-13.0	-63.3	9.9	-55.6

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
Correction Factor = gain of substitution antenna + cable loss



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CHANNEL BANDWIDTH: 10MHz / QPSK / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Low channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1409.0	-48.4	-13.0	-52.9	7.7	-47.4
2	2113.5	-59.7	-13.0	-59.6	8.3	-53.5
3	2818.0	-62.3	-13.0	-61.9	9.9	-54.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1409.0	-49.0	-13.0	-54.4	7.7	-48.9
2	2113.5	-58.4	-13.0	-57.5	8.3	-51.4
3	2818.0	-62.1	-13.0	-61.5	9.9	-53.8

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Low channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1409.0	-50.1	-13.0	-54.6	7.7	-49.1
2	2113.5	-61.4	-13.0	-61.3	8.3	-55.2
3	2818.0	-63.0	-13.0	-62.6	9.9	-54.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	ERP (dBm)
1	1409.0	-50.8	-13.0	-56.2	7.7	-50.7
2	2113.5	-63.3	-13.0	-62.4	8.3	-56.3
3	2818.0	-63.6	-13.0	-63.0	9.9	-55.3

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Correction Factor = gain of substitution antenna + cable loss

LTE Band 4

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

MODE		Low channel		TEST MODE		A
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3420.6	-58.6	-13.0	-56.1	9.9	-46.2
2	5130.9	-63.6	-13.0	-54.6	9.7	-44.9
3	6841.2	-66.4	-13.0	-51.8	7.8	-44.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3420.6	-59.5	-13.0	-57.8	9.9	-47.9
2	5130.9	-58.5	-13.0	-52.1	9.7	-42.4
3	6841.2	-64.0	-13.0	-51.5	7.8	-43.7

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB

MODE		High channel		TEST MODE		A
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3500.6	-60.1	-13.0	-57.6	9.9	-47.7
2	5250.9	-65.6	-13.0	-56.6	9.7	-46.9
3	7001.2	-67.2	-13.0	-52.6	7.8	-44.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3500.6	-60.8	-13.0	-59.1	9.9	-49.2
2	5250.9	-64.8	-13.0	-58.4	9.7	-48.7
3	7001.2	-63.9	-13.0	-51.4	7.8	-43.6

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
Correction Factor = gain of substitution antenna + cable loss



A D T

CHANNEL BANDWIDTH: 5MHz / QPSK / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Low channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3425.0	-62.8	-13.0	-60.3	9.9	-50.4
2	5137.5	-67.2	-13.0	-58.2	9.7	-48.5
3	6850.0	-66.4	-13.0	-51.8	7.8	-44.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3425.0	-60.8	-13.0	-59.1	9.9	-49.2
2	5137.5	-64.8	-13.0	-58.4	9.7	-48.7
3	6850.0	-63.9	-13.0	-51.4	7.8	-43.6

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Low channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3426.0	-62.7	-13.0	-60.2	9.9	-50.3
2	5137.5	-66.6	-13.0	-57.6	9.7	-47.9
3	6850.0	-67.7	-13.0	-53.1	7.8	-45.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3426.0	-62.2	-13.0	-60.5	9.9	-50.6
2	5137.5	-64.2	-13.0	-57.8	9.7	-48.1
3	6850.0	-64.1	-13.0	-51.6	7.8	-43.8

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
Correction Factor = gain of substitution antenna + cable loss



CHANNEL BANDWIDTH: 5MHz / QPSK / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Low channel	TEST MODE		B	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3420.76	-59.4	-13.0	-56.9	9.9	-47.0
2	5131.08	-67.3	-13.0	-58.3	9.7	-48.6
3	6841.44	-58.6	-13.0	-44.0	7.8	-36.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3420.76	-59.7	-13.0	-58.0	9.9	-48.1
2	5131.08	-65.3	-13.0	-58.9	9.7	-49.2
3	6841.44	-58.8	-13.0	-46.3	7.8	-38.5

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
Correction Factor = gain of substitution antenna + cable loss

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

MODE		High channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3500	-63.7	-13.0	-61.2	9.9	-51.3
2	5250	-67.7	-13.0	-58.7	9.7	-49.0
3	7000	-66.6	-13.0	-52.0	7.8	-44.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3500	-61.9	-13.0	-60.2	9.9	-50.3
2	5250	-63.7	-13.0	-57.3	9.7	-47.6
3	7000	-64.7	-13.0	-52.2	7.8	-44.4

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB

MODE		High channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3500	-62.7	-13.0	-60.2	9.9	-50.3
2	5250	-65.1	-13.0	-56.1	9.7	-46.4
3	7000	-66.2	-13.0	-51.6	7.8	-43.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3500	-62.8	-13.0	-61.1	9.9	-51.2
2	5250	-62.8	-13.0	-56.4	9.7	-46.7
3	7000	-65.2	-13.0	-52.7	7.8	-44.9

NOTE: ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
Correction Factor = gain of substitution antenna + cable loss



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CHANNEL BANDWIDTH: 10MHz / QPSK / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		High channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3491.2	-63.5	-13.0	-61.0	9.9	-51.1
2	5236.8	-67.5	-13.0	-58.5	9.7	-48.8
3	6982.4	-67.3	-13.0	-52.7	7.8	-44.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3491.2	-59.8	-13.0	-58.1	9.9	-48.2
2	5236.8	-63.8	-13.0	-57.4	9.7	-47.7
3	6982.4	-64.6	-13.0	-52.1	7.8	-44.3

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1 RB ALLOCATED AT THE LOWER EDGE

MODE		Low channel	TEST MODE		A	
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3421.2	-60.7	-13.0	-58.2	9.9	-48.3
2	5131.8	-67.2	-13.0	-58.2	9.7	-48.5
3	6842.8	-66.8	-13.0	-52.2	7.8	-44.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3m						
NO.	FREQ. (MHz)	SPA READING (dBm)	LIMIT (dBm)	S.G POWER VALUE (dBm)	CORRECTION FACTOR (dB)	EIRP (dBm)
1	3421.2	-56.0	-13.0	-54.3	9.9	-44.4
2	5131.8	-65.0	-13.0	-58.6	9.7	-48.9
3	6842.8	-64.9	-13.0	-52.4	7.8	-44.6

NOTE: EIRP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
Correction Factor = gain of substitution antenna + cable loss



5 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 accredited and approved according to ISO/IEC 17025.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml. 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 Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

Email: service.adt@tw.bureauveritas.com

Web Site: www.adt.com.tw

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

6 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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