FCC TEST REPORT

(Part 24)

REPORT NO.:	RF110311C24A-6 R1
MODEL NO.:	MC75A6HF
FCC ID:	UZ7MC75A6HF
RECEIVED:	Mar. 07, 2011
TESTED:	Mar. 08 ~ Mar. 21, 2011
ISSUED:	Jun. 03, 2011

APPLICANT:	Motorola Solutions Inc.
ADDRESS:	One Motorola Plaza, Holtsville, NY 11742-1300 USA

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
LAB ADDRESS:	No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang, Taipei Hsien 244, Taiwan, R.O.C.
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	Mar. 22, 2011
RF110311C24A-6 R1	Modified item 3.1 description	Jun. 03, 2011

1 CERTIFICATION

PRODUCT:	Mobile Computer
MODEL NO.:	MC75A6HF
BRAND:	Motorola
APPLICANT:	Motorola Solutions Inc.
TEST SAMPLE:	ENGINEERING SAMPLE
TESTED:	Mar. 08 ~ Mar. 21, 2011
TEST STANDARDS:	**FCC Part 24, Subpart E** ANSI C63.4-2003

The above equipment (model: MC75A6HF) 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 / Specialist , **DATE :** Jun. 03, 2011

APPROVED BY : Gary Chang / Assistant Manager , **DATE :** Jun. 03, 2011

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
2.1046 24.232	Maximum Peak Output Power Limit: max. 2 watts e.i.r.p peak power	PASS	Meet the requirement of limit. Max. e.i.r.p is 31.0dBm at 1909.8MHz.
2.1055 24.235	Frequency Stability AFC Freq. Error vs. Voltage AFC Freq. Error vs. Temperature Limit: max. +/-2.5ppm	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 –20.2dB at 7400.8MHz.

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	2.93 dB
	200MHz ~1000MHz	2.95 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	Mobile Computer	
MODEL NO.	MC75A6HF	
FCC ID	UZ7MC75A6HF	
POWER SUPPLY	3.7Vdc (Li-ion battery) 5.4Vdc (Adapter)	
MODULATION TYPE	**GSM, GPRS, E-GPRS**	GMSK, 8PSK
	WCDMA	BPSK
FREQUENCY RANGE	**GSM, GPRS, E-GPRS**	1850.2MHz ~ 1909.8MHz
	WCDMA	1852.4MHz ~ 1907.6MHz
MAX. EIRP POWER	**GSM**	1.2589Watts
	GPRS	1.0965Watts
	E-GPRS	0.5754Watts
	WCDMA	0.3548Watts
MULTI-SLOTS CLASS	10	
WCDMA RELEASE VERSION	5	
ANTENNA TYPE	Monopole antenna with 2.02dBi gain	
DATA CABLE	NA	
I/O PORTS	Refer to user's manual	
ACCESSORY DEVICES	Battery	

NOTE:

1. The EUT is a Mobile Computer. The test data are separated into following test reports.

	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g	FCC Part 15, Subpart C (Section 15.247)	RF110311C24A R1
WLAN 802.11a (5745~5825 MHz)		
WLAN 802.11a (5180~5320MHz, 5500~5700MHz)	FCC Part 15, Subpart E (Section 15.407)	RF110311C24A-1 R1
WLAN 802.11a (For DFS report) (5260~5320MHz, 5500~5700MHz)	FCC Part 15, Subpart E (Section 15.407)	RF110311C24A-3
BLUETOOTH	FCC Part 15, Subpart C (Section 15.247)	RF110311C24A-2 R1
RF ID	FCC Part 15, Subpart C (Section 15.225, 15.215)	RF110311C24A-4 R1
GSM 850 / WCDMA 850	FCC Part 22	RF110311C24A-5 R1
GSM 1900 / WCDMA 1900	FCC Part 24	RF110311C24A-6 R1

2. The EUT configuration is as below

BRAND	MODEL	DESCRIPTION
Motorola	MC75A6HF	HSDPA BB Numeric Camera

3. The EUT uses the following Li-ion battery:

BATTERY (1.5X)	
BRAND:	MOTOROLA
PART NUMBER:	82-71364-05
RATING:	3.7Vdc, 3600mAh, 13.3Wh

4. The following accessories are for optional units only.

PRODUCT	BRAND	MODEL	DESCRIPTION
RS232 charging cable	Motorola	25-102776-02R	1.2m non-shielded cable with one core
USB charging cable	Motorola	25-102775-02R	1.5m shielded cable with one core
Headset	Motorola	50-11300-050R	VR10 headset 0.8m non-shielded cable with one core
Power Supply Adaptor	Motorola	EADP-16BB A	I/P: 100-240Vac, 50-60Hz, 0.4A O/P: 5.4Vdc, 3A 1.8m non-shielded cable without core

5. The communicated functions of EUT listed as below:

		850MHz	1900MHz	
2G	GSM	√	√	With 802.11a/b/g + Bluetooth+GPS+RFID
	GPRS	√	√	
	E-GPRS	√	√	
3G	WCDMA	√	√	
	HSDPA	√	√	

6. Hardware version: EV3.
7. Software version: BSP 23.137.
8. IMEI Code: 355282030239490.
9. 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

FOR GSM, GPRS & E-GPRS:

299 channels are provided to this EUT. Therefore, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	512	1850.2 MHz	GSM, GPRS, E-GPRS
MIDDLE	661	1880.0 MHz	GSM, GPRS, E-GPRS
HIGH	810	1909.8 MHz	GSM, GPRS, E-GPRS

NOTE:

1. Below 1 GHz, the channel 512, 661, and 810 were pre-tested in chamber. The channel 810 was chosen for final test.
2. Above 1 GHz, the channel 512, 661, and 810 were tested individually.
3. The worst case for final test is chosen when the power control level set 0.
4. The channel space is 0.2MHz.
5. The EUT is a GPRS class 10 device (Multislot class: 10, Mobile Terminal B), which provide 2 up-link. After pre-tested 2 functions, found up-link with 1 time slot is worse, therefore, test results of output power, frequency stability, occupied bandwidth and band edge tests came out from this.
6. The EUT is an E-GPRS class 10 device (Multislot class: 10, Mobile Terminal B), which provide 2 up-link. After pre-tested 2 functions, found up-link with 1 time slot is worse, therefore, test results of output power, frequency stability, occupied bandwidth and band edge tests came out from this.
7. The EUT has GSM, GPRS & E-GPRS functions. After pre-testing, GSM function is the worst case for all the emission tests.

FOR WCDMA:

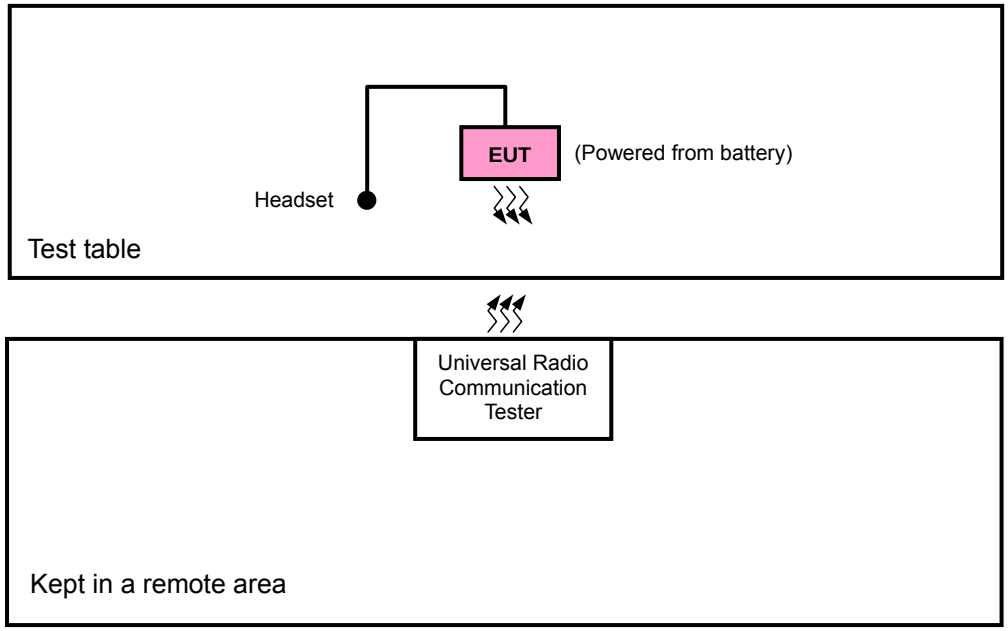
277 channels are provided to this EUT. Therefore, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	9262	1852.4 MHz	WCDMA, HSDPA
MIDDLE	9400	1880.0 MHz	WCDMA, HSDPA
HIGH	9538	1907.6 MHz	WCDMA, HSDPA

NOTE:

1. Below 1 GHz, the channel 9262, 9400 and 9538 were pre-tested in chamber. The channel 9538 was chosen for final test.
2. Above 1 GHz, the channel 9262, 9400 and 9538 were tested individually.
3. The channel space is 0.2MHz.
4. After pretest of output power and spurious emission under WCDMA-RMC, WCDMA-AMR & HSDPA mode, find the worst mode is WCDMA-RMC. Therefore, select WCDMA-RMC mode to do final test.

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR GSM, GPRS & E-GPRS:

EUT CONFIGURE MODE	APPLICABLE TO							DESCRIPTION
	OP	FS	OB	BE	CE	RE<1G	RE≥1G	
-	√	√	√	√	√	√	√	-

Where **OP:** Output power **FS:** Frequency stability
OB: Occupied bandwidth **BE:** Band edge
CE: Conducted spurious emissions **RE<1G:** Radiated emission below 1GHz
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, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	AXIS
512 to 810	512, 661, 810	GSM, GPRS, EGPRS	Y

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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
512 to 810	661	GSM

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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
512 to 810	512, 661, 810	GSM, GPRS, EGPRS

BAND EDGE 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
512 to 810	512, 810	GSM, GPRS, EGPRS

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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
512 to 810	512, 661, 810	GSM

RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):

☒ 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 (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	AXIS
512 to 810	810	GSM	Y

RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):

☒ 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 (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	AXIS
512 to 810	512, 661, 810	GSM	Y

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
OP	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
FS	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
OB	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
EM	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
BE	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
CE	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
RE < 1G	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
RE ≥ 1G	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin

FOR WCDMA:

EUT CONFIGURE MODE	APPLICABLE TO							DESCRIPTION
	OP	FS	OB	BE	CE	RE<1G	RE≥1G	
-	√	√	√	√	√	√	√	-

Where **OP:** Output power **FS:** Frequency stability
OB: Occupied bandwidth **BE:** Band edge
CE: Conducted spurious emissions **RE<1G:** Radiated emission below 1GHz
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, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	AXIS
9262 to 9538	9262, 9400, 9538	WCDMA	Y

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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
9262 to 9538	9400	WCDMA

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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
9262 to 9538	9262, 9400, 9538	WCDMA

BAND EDGE 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
9262 to 9538	9262, 9538	WCDMA

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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
9262 to 9538	9262, 9400, 9538	WCDMA

RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):

☒ 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 (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	AXIS
9262 to 9538	9538	WCDMA	Y

RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):

☒ 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 (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	AXIS
9262 to 9538	9262, 9400, 9538	WCDMA	Y

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
OP	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
FS	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
OB	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
EM	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
BE	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
CE	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
RE < 1G	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin
RE ≥ 1G	22deg. C, 65%RH, 1008 hPa	120Vac, 60Hz	Sun Lin

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 24

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	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	104484	NA
2	NJZ-2000 (GPRS+WCDMA SIMULATOR)	JRC	NJZ-2000	ET00054	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

NOTE 1: All power cords of the above support units are non shielded (1.8m).

NOTE 2: Item 1-2 acted as a communication partners to transfer data.

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 24.232(b) that “Mobile / Portable station are limited to 2 watts e.i.r.p” and 24.232(c) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2010	Aug. 03, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Jul. 09, 2010	Jul. 08, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Aug. 02, 2010	Aug. 01, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01910	Sep. 09, 2010	Sep. 08, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 20, 2010	Aug. 19, 2011
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	NA	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 9.
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 460141.
5. The IC Site Registration No. is IC 7450F-4.

4.1.3 TEST PROCEDURES

EIRP MEASUREMENT:

a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 512, 661 and 810 (GSM, GPRS & E-GPRS) / 9262, 9400 and 9538 (WCDMA) (low, middle and high operational frequency range.) RWB and VBW is 1MHz for GSM/GPRS/EGPRS and 5MHz for WCDMA mode.

b. 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.

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 c. Record the power level of S.G

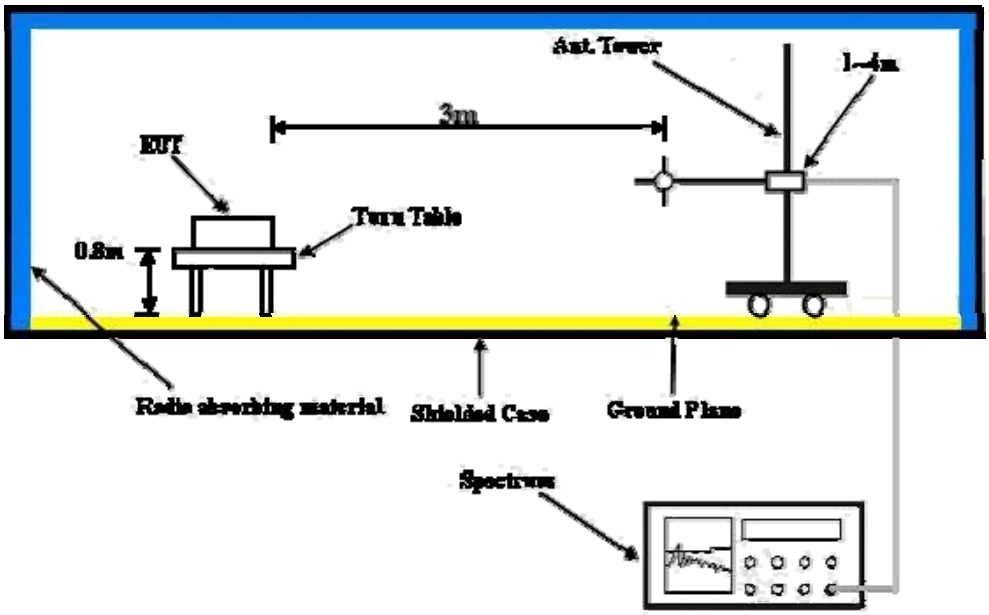
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

CONDUCTED POWER MEASUREMENT:

a. The EUT was set up for the maximum power with GSM, GPRS & EGPRS/WCDMA 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.

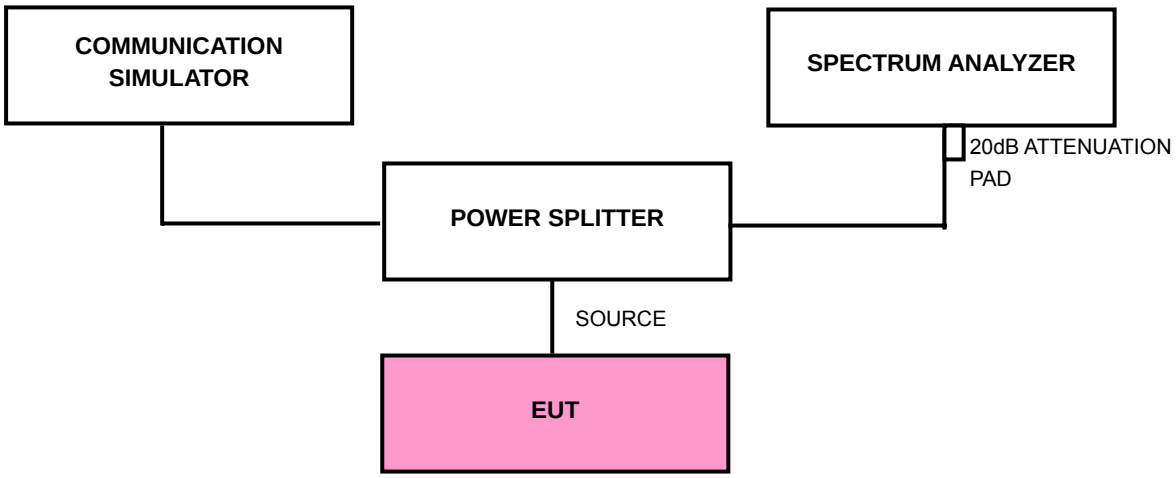
4.1.4 TEST SETUP

EIRP POWER 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

FOR GSM, GPRS & E-GPRS:

FOR GSM

CONDUCTED OUTPUT POWER					
CHANNEL NO.	FREQUENCY (MHz)	RAW VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
512	1850.2	25.44	4.50	29.94	0.9863
661	1880.0	25.56	4.50	30.06	1.0139
810	1909.8	25.51	4.50	30.01	1.0023

FOR GPRS MODE (UP-LINK WITH 1 TIME SLOT)

CONDUCTED OUTPUT POWER					
CHANNEL NO.	FREQUENCY (MHz)	RAW VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
512	1850.2	25.38	4.50	29.88	0.9727
661	1880.0	25.49	4.50	29.99	0.9977
810	1909.8	25.28	4.50	29.78	0.9506

FOR E-GPRS MODE (UP-LINK WITH 1 TIME SLOT)

CONDUCTED OUTPUT POWER					
CHANNEL NO.	FREQUENCY (MHz)	RAW VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
512	1850.2	22.32	4.50	26.82	0.4808
661	1880.0	22.41	4.50	26.91	0.4909
810	1909.8	22.25	4.50	26.75	0.4732

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

2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB).

FOR GSM MODE

EIRP POWER					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
512	1850.2	21.7	8.4	30.1	1.0233
661	1880.0	21.7	8.6	30.3	1.0715
810	1909.8	22.5	8.5	31.0	1.2589

FOR GPRS MODE (UP-LINK WITH 1 TIME SLOT)

EIRP POWER					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
512	1850.2	21.3	8.4	29.7	0.9333
661	1880.0	21.2	8.6	29.8	0.9550
810	1909.8	21.9	8.5	30.4	1.0965

FOR E-GPRS MODE (UP-LINK WITH 1 TIME SLOT)

EIRP POWER					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
512	1850.2	18.5	8.4	26.9	0.4898
661	1880.0	18.3	8.6	26.9	0.4898
810	1909.8	19.1	8.5	27.6	0.5754

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

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

FOR WCDMA:

WCDMA-RMC MODE

CONDUCTED OUTPUT POWER					
CHANNEL NO.	FREQUENCY (MHz)	RAW VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
9262	1852.40	21.98	1.00	22.98	0.1986
9400	1880.00	21.02	2.00	23.02	0.2004
9538	1907.60	19.89	3.00	22.89	0.1945

WCDMA-AMR MODE

CONDUCTED OUTPUT POWER					
CHANNEL NO.	FREQUENCY (MHz)	RAW VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
9262	1852.40	21.91	1.00	22.91	0.1954
9400	1880.00	20.94	2.00	22.94	0.1968
9538	1907.60	19.77	3.00	22.77	0.1892

HSDPA MODE

CONDUCTED OUTPUT POWER					
CHANNEL NO.	FREQUENCY (MHz)	RAW VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
9262	1852.40	20.64	1.00	21.64	0.1459
9400	1880.00	19.99	2.00	21.99	0.1581
9538	1907.60	18.43	3.00	21.43	0.1390

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

2. Correction Factor (dB) = Power Splitter Loss (dB) + Cable Loss (dB).

WCDMA-RMC MODE

EIRP POWER					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
9262	1852.40	16.2	8.4	24.6	0.2884
9400	1880.00	16.4	8.6	25.0	0.3162
9538	1907.60	17.0	8.5	25.5	0.3548

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

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

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

According to the FCC part 24.235 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The frequency error rate is according to the JTC standard that the frequency error rate shall be accurate to within 2.5ppm of the received frequency from the base station. 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℃~55℃.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250266	Aug. 11, 2010	Aug. 10, 2011
Hewlett Packard RF cable	8120-6192	01428251	NA	NA
RF cable	SUCOFLEX 104	257029	Sep. 11, 2010	Sep. 10, 2011
WIT Standard Temperature & Humidity Chamber	MHU-225AU	920409	May 06, 2010	May 05, 2011

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

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 GPRS / WCDMA link mode. This is accomplished with the use of the R&S CMU200 / JRC NJZ-2000 simulator station. The oven room could control the temperatures and humidity. The GPRS link channel is the 190 and the WCDMA link channel is the 9400.

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.

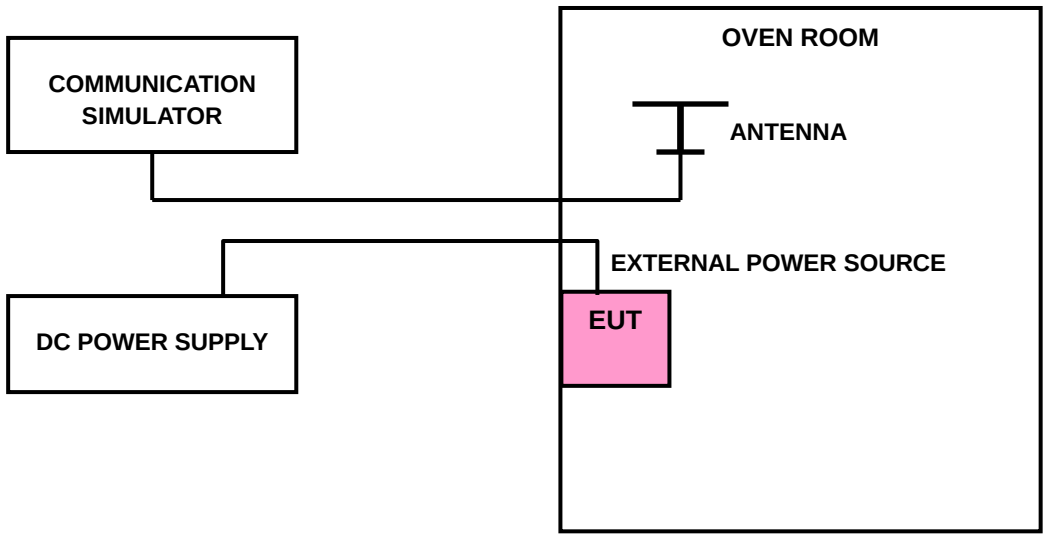
c. EUT is connected the external power supply to control the DC input power. The various Volts from the minimum 3.7Volts to 4.2Volts. Each step shall be record the frequency error rate.

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 GSM simulator.

4.2.4 TEST SETUP



4.2.5 TEST RESULTS

FOR GSM:

AFC FREQUENCY ERROR vs. VOLTAGE			
VOLTAGE (Volts)	**FREQUENCY ERROR (Hz)**	**FREQUENCY ERROR (ppm)**	**LIMIT (ppm)**
4.2	1	0.001	2.5
3.7	-3	-0.002	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.7Vdc to 4.2Vdc.

AFC FREQUENCY ERROR vs. TEMP.			
TEMP. (℃)	**FREQUENCY ERROR (Hz)**	**FREQUENCY ERROR (ppm)**	**LIMIT (ppm)**
55	8	0.004	2.5
50	7	0.004	2.5
40	5	0.003	2.5
30	1	0.001	2.5
20	-2	-0.001	2.5
10	-3	-0.002	2.5
0	-4	-0.002	2.5
-10	-7	-0.004	2.5
-20	-5	-0.003	2.5
-30	-8	-0.004	2.5

FOR WCDMA:

AFC FREQUENCY ERROR vs. VOLTAGE			
VOLTAGE (Volts)	**FREQUENCY ERROR (Hz)**	**FREQUENCY ERROR (ppm)**	**LIMIT (ppm)**
4.2	-1	-0.001	2.5
3.7	-3	-0.002	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.7Vdc to 4.2Vdc.

AFC FREQUENCY ERROR vs. TEMP.			
TEMP. (℃)	**FREQUENCY ERROR (Hz)**	**FREQUENCY ERROR (ppm)**	**LIMIT (ppm)**
55	6	0.003	2.5
50	5	0.003	2.5
40	3	0.002	2.5
30	1	0.001	2.5
20	-3	-0.002	2.5
10	-4	-0.002	2.5
0	-6	-0.003	2.5
-10	-4	-0.002	2.5
-20	-7	-0.004	2.5
-30	-9	-0.005	2.5

4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

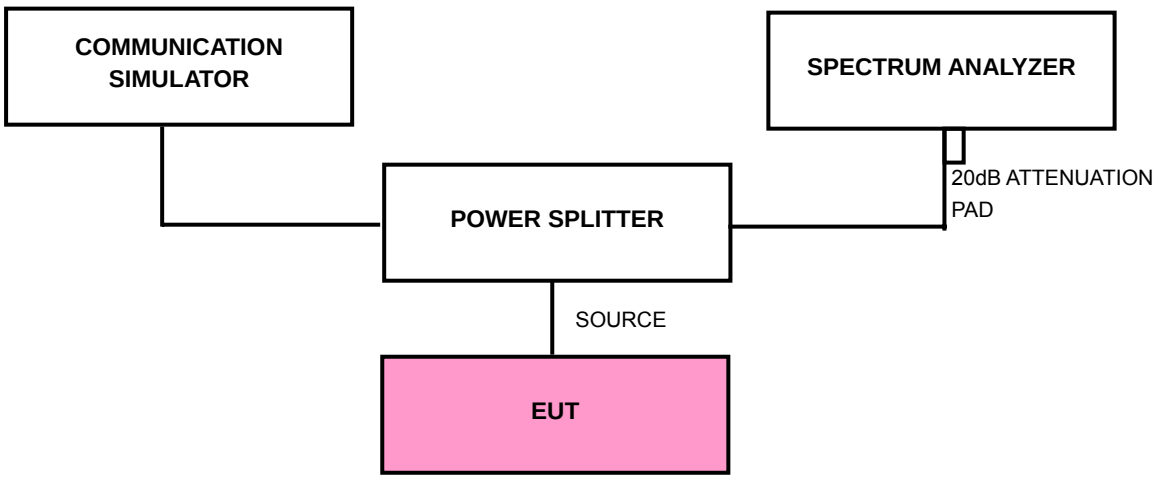
The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the totalmean power of a given emission.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Jan. 11, 2011	Jan. 10, 2012
Mini-Circuits Power Splitter	ZN2PD-9G	NA	Jun. 25, 2010	Jun. 24, 2011
RF cable	SUCOFLEX 104	274403/4	Aug. 20, 2010	Aug. 19, 2011
RF cable	SUCOFLEX 104	250729/4	Aug. 19, 2010	Aug. 18, 2011
RF cable	SUCOFLEX 104	214377/4	Aug. 19, 2010	Aug. 18, 2011
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

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

4.3.3 TEST SETUP



4.3.4 TEST PROCEDURES

a. The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 512, 661 and 810 (GSM/GPRS / E-GPRS) / 9262, 9400 and 9538 (WCDMA) (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. This splitter loss and cable loss are the worst loss 24.3dB in the transmitted path track.

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 EUT OPERATING CONDITION

a. The EUT makes a call to the communication simulator.

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

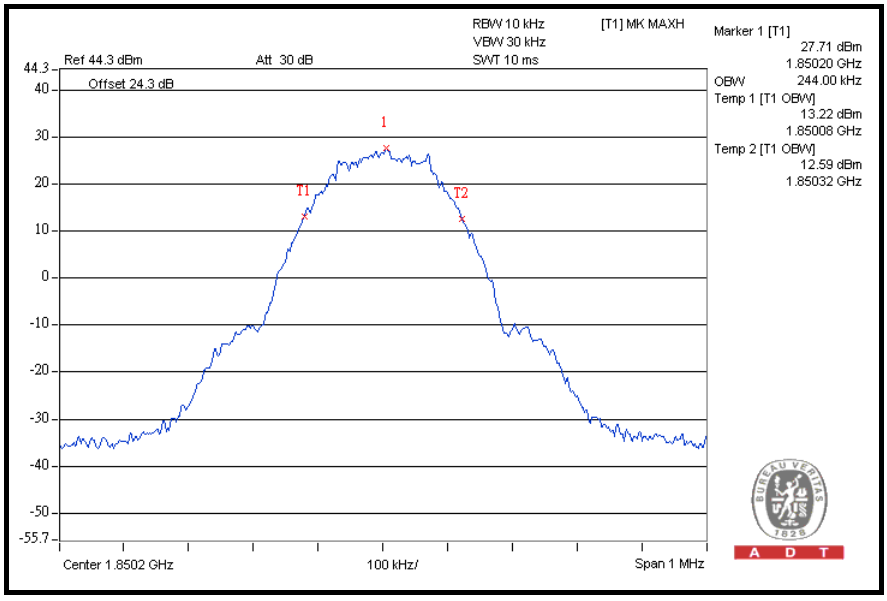
4.3.6 TEST RESULTS

FOR GSMGPRS & E-GPRS:

FOR GSM MODE

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)
512	1850.2	244
661	1880.0	240
810	1909.8	242

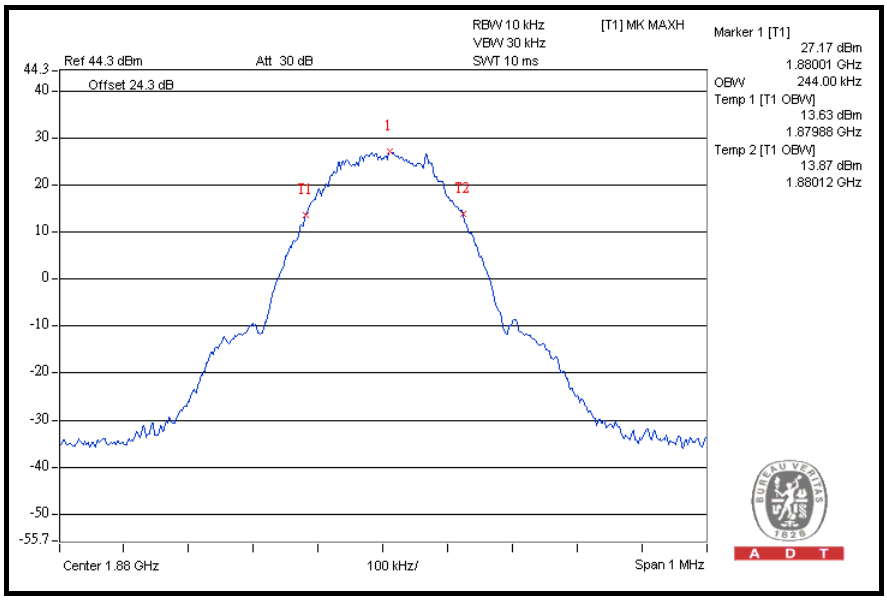
CH 512



FOR GPRS MODE (UP-LINK WITH 1 TIME SLOT)

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)
512	1850.2	242
661	1880.0	244
810	1909.8	242

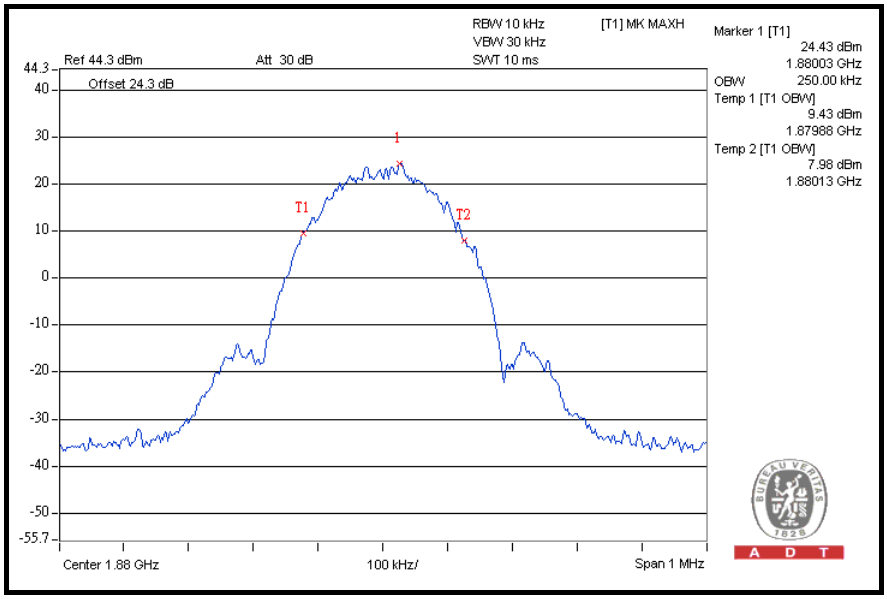
CH 661



FOR E-GPRS MODE (UP-LINK WITH 1 TIME SLOT)

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)
512	1850.2	248
661	1880.0	250
810	1909.8	242

CH 661

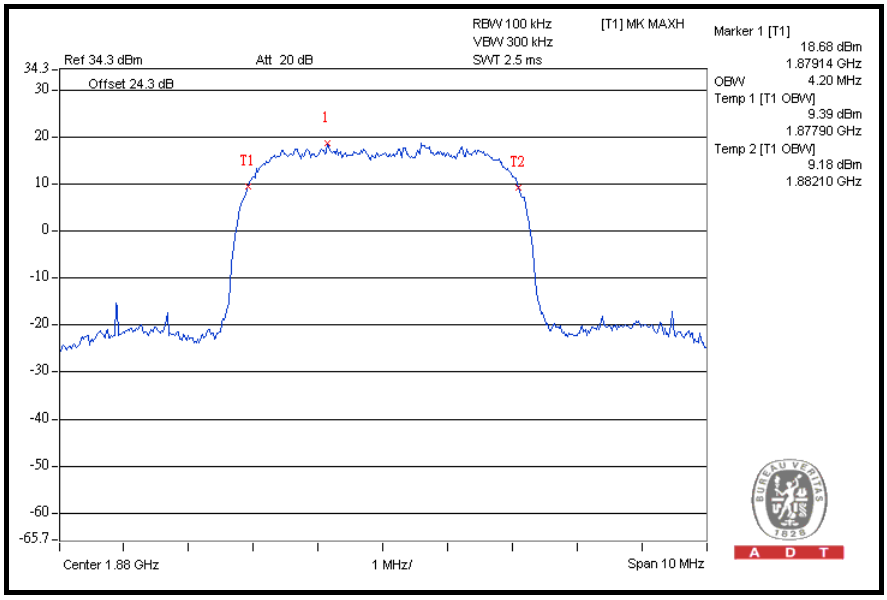


FOR WCDMA

FOR WCDMA-RMC:

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
9262	1852.4	4.18
9400	1880.0	4.20
9538	1907.6	4.20

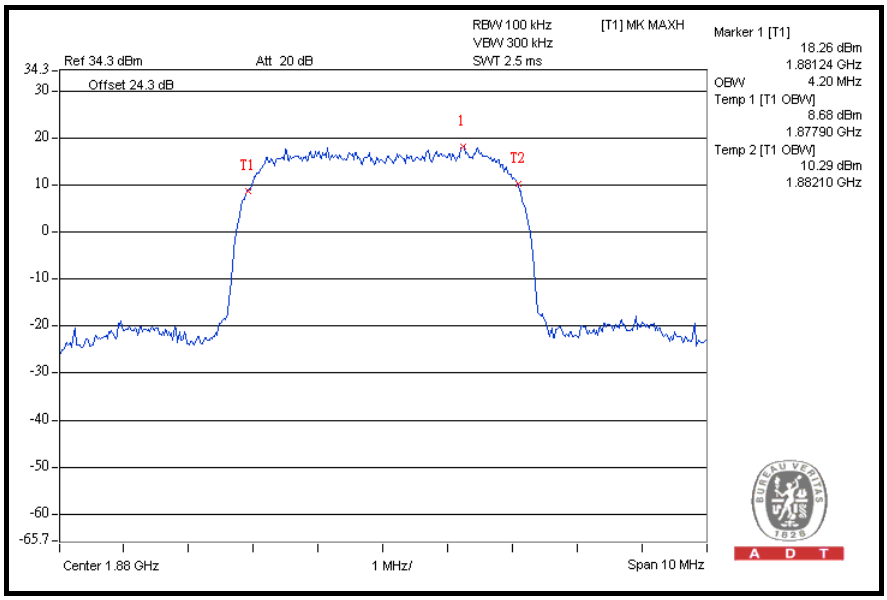
CH 9400



FOR WCDMA-AMR:

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
9262	1852.4	4.18
9400	1880.0	4.20
9538	1907.6	4.20

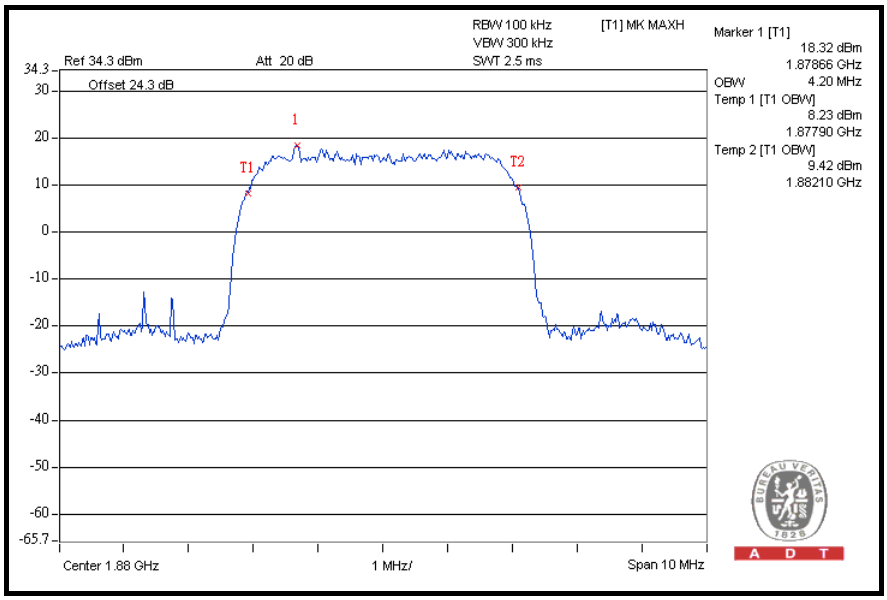
CH 9400



FOR HSDPA:

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
9262	1852.4	4.18
9400	1880.0	4.20
9538	1907.6	4.20

CH 9400



4.4 BAND EDGE MEASUREMENT

4.4.1 LIMITS OF BAND EDGE MEASUREMENT

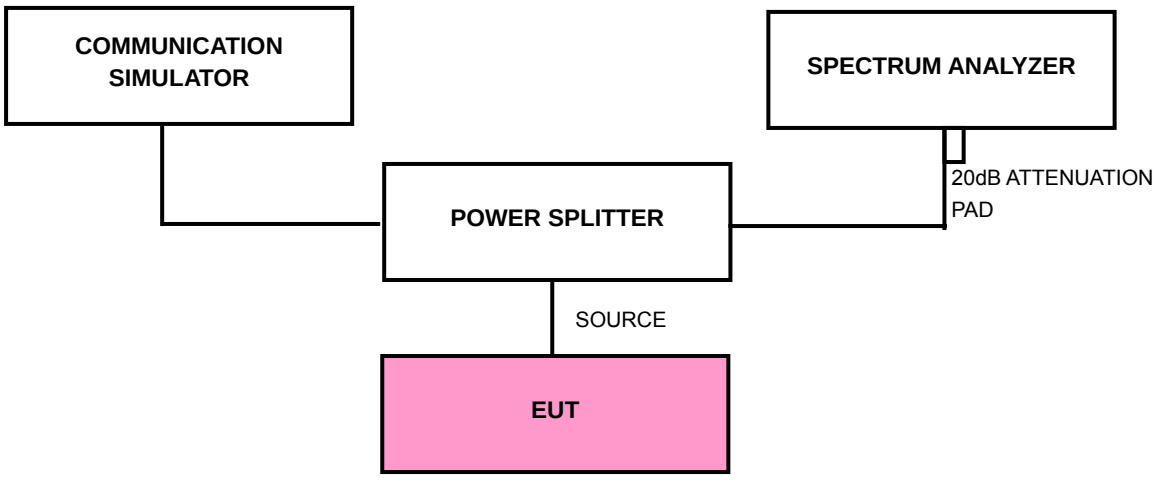
According to FCC 24.238(a) specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Jan. 11, 2011	Jan. 10, 2012
Mini-Circuits Power Splitter	ZN2PD-9G	NA	Jun. 25, 2010	Jun. 24, 2011
RF cable	SUCOFLEX 104	274403/4	Aug. 20, 2010	Aug. 19, 2011
RF cable	SUCOFLEX 104	250729/4	Aug. 19, 2010	Aug. 18, 2011
RF cable	SUCOFLEX 104	214377/4	Aug. 19, 2010	Aug. 18, 2011
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

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

4.4.3 TEST SETUP



4.4.4 TEST PROCEDURES

a. The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels, 512 and 810 (GSM/GPRS/ E-GPRS) / 9262 and 9538 (WCDMA) (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. This splitter loss and cable loss are the worst loss 24.3dB in the transmitted path track.

c. The center frequency of spectrum is the band edge frequency and span is 1.5 MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/ E-GPRS).

d. The center frequency of spectrum is the band edge frequency and span is 10 MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).

e. Record the max trace plot into the test report.

4.4.5 EUT OPERATING CONDITION

a. The EUT makes a call to the communication simulator.

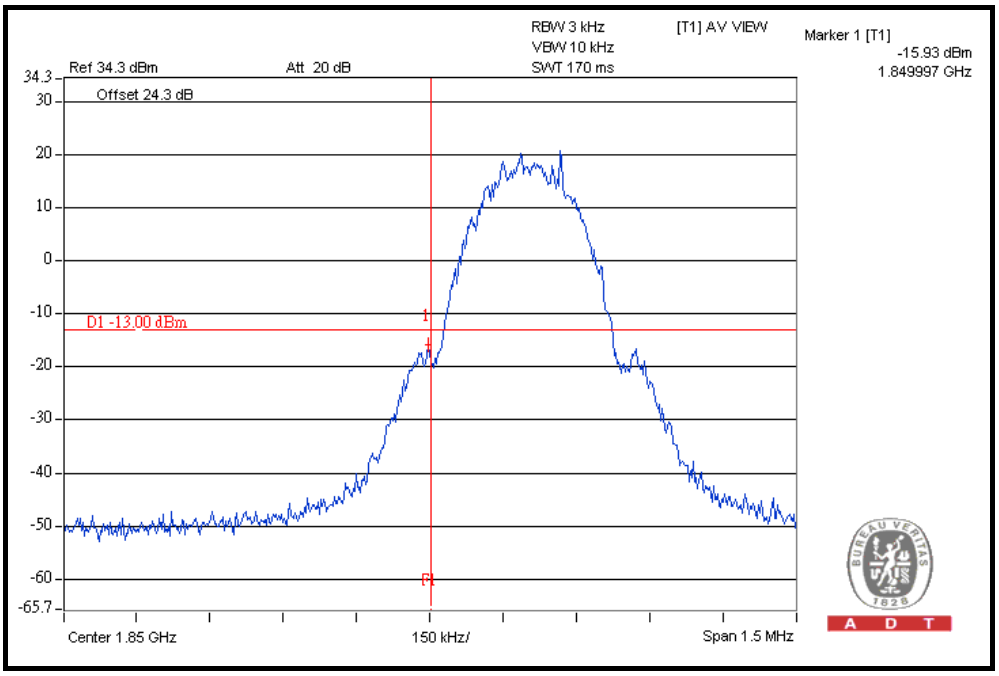
b. The communication simulator station system controlled an EUT to export maximum output power under transmission mode and specific channel frequency.

4.4.6 TEST RESULTS

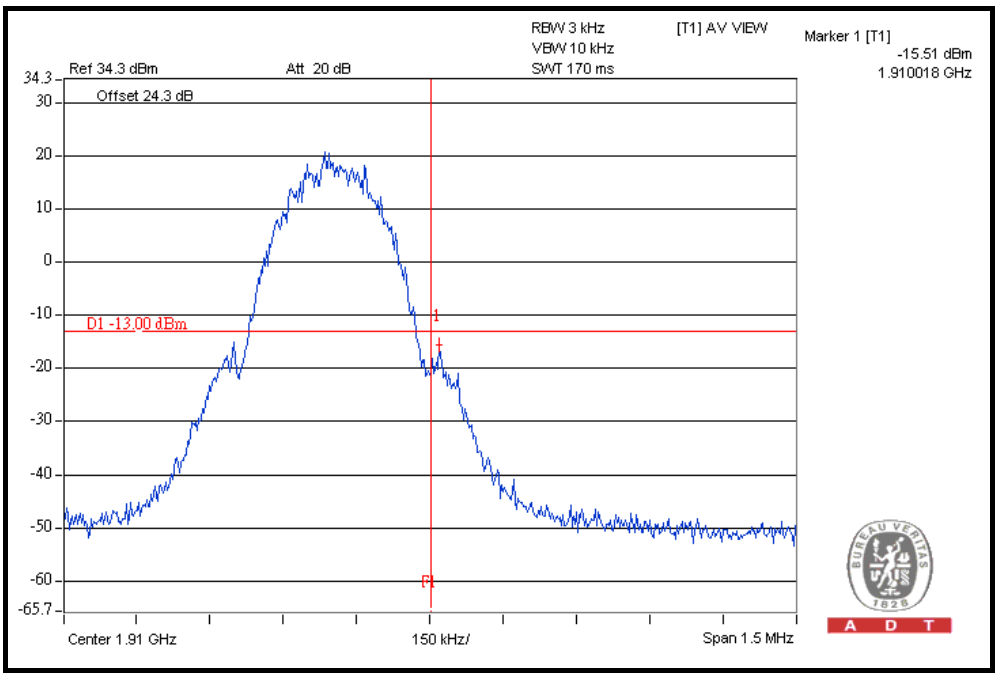
FOR GSM / GPRS / E-GPRS:

FOR GSM MODE

LOWER BAND EDGE

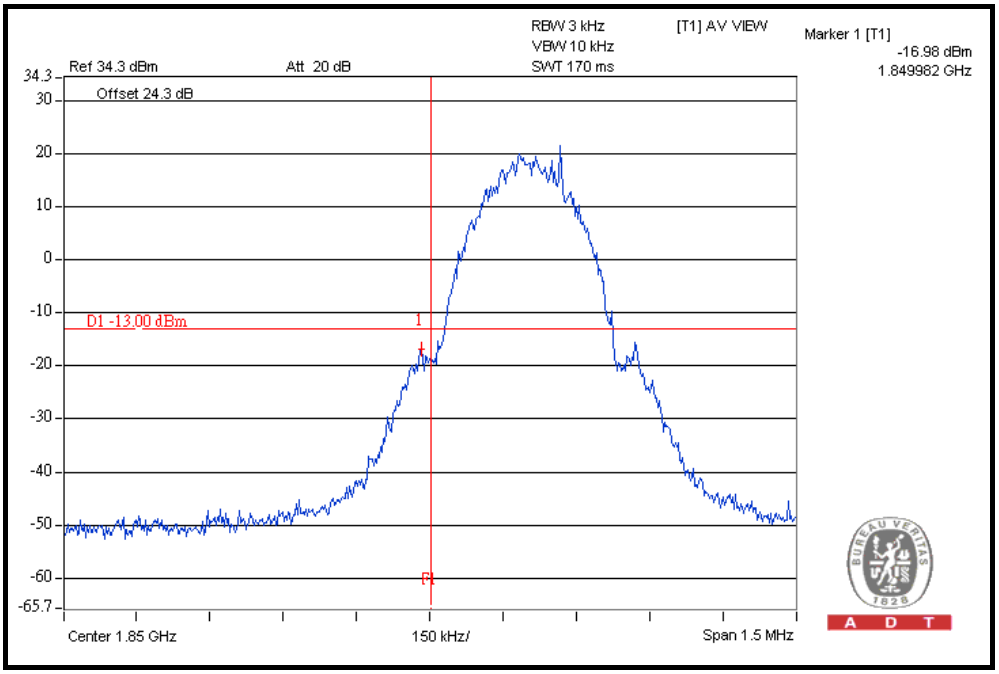


HIGHER BAND EDGE

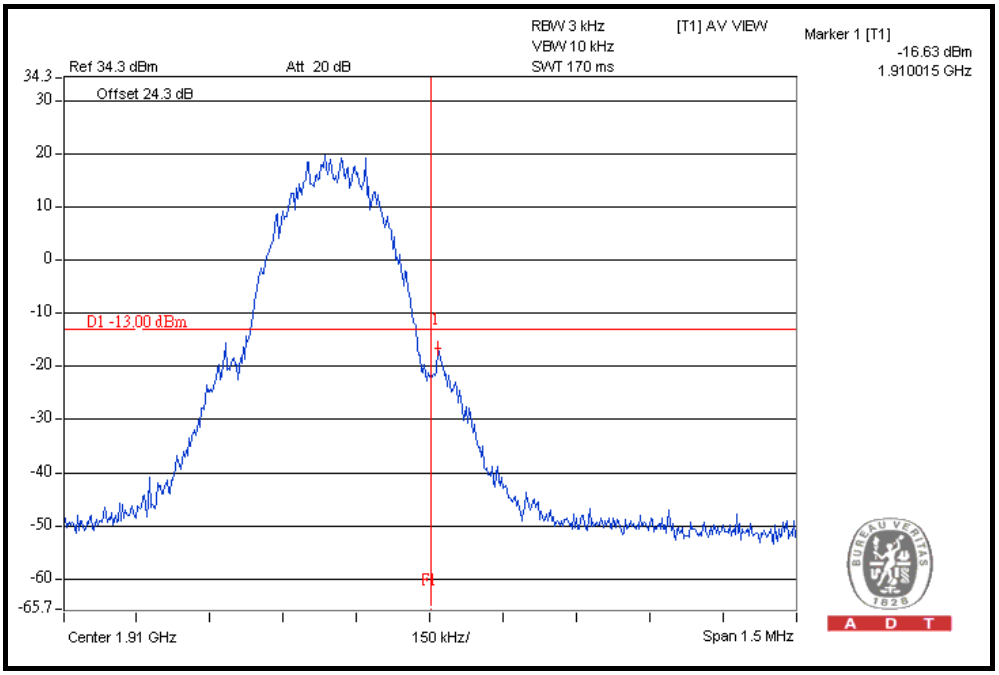


FOR GPRS MODE (UP-LINK WITH 1 TIME SLOT)

LOWER BAND EDGE

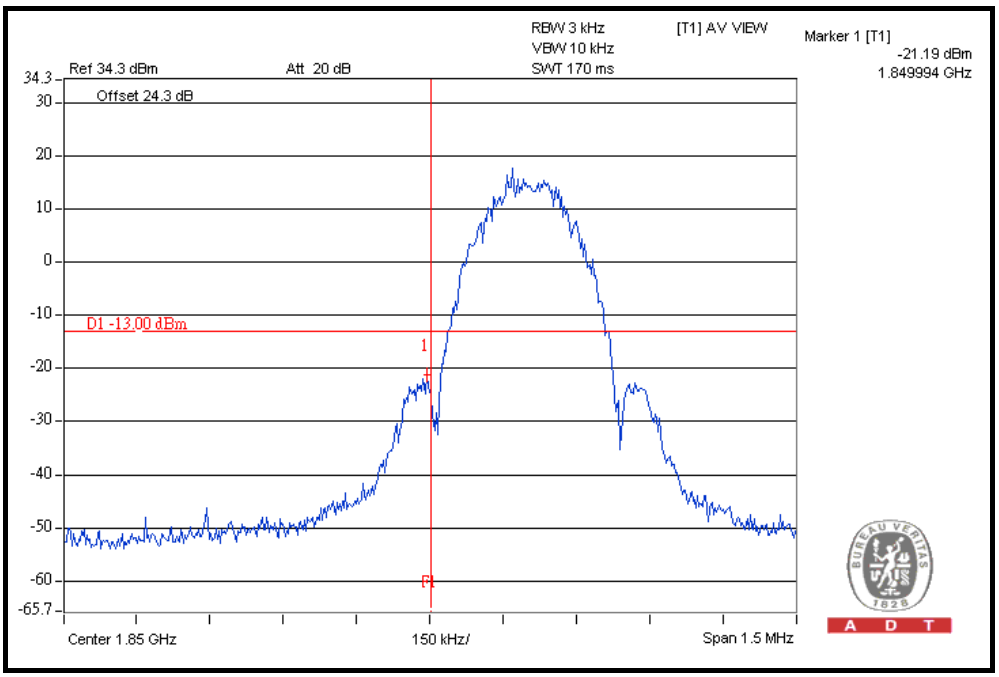


HIGHER BAND EDGE

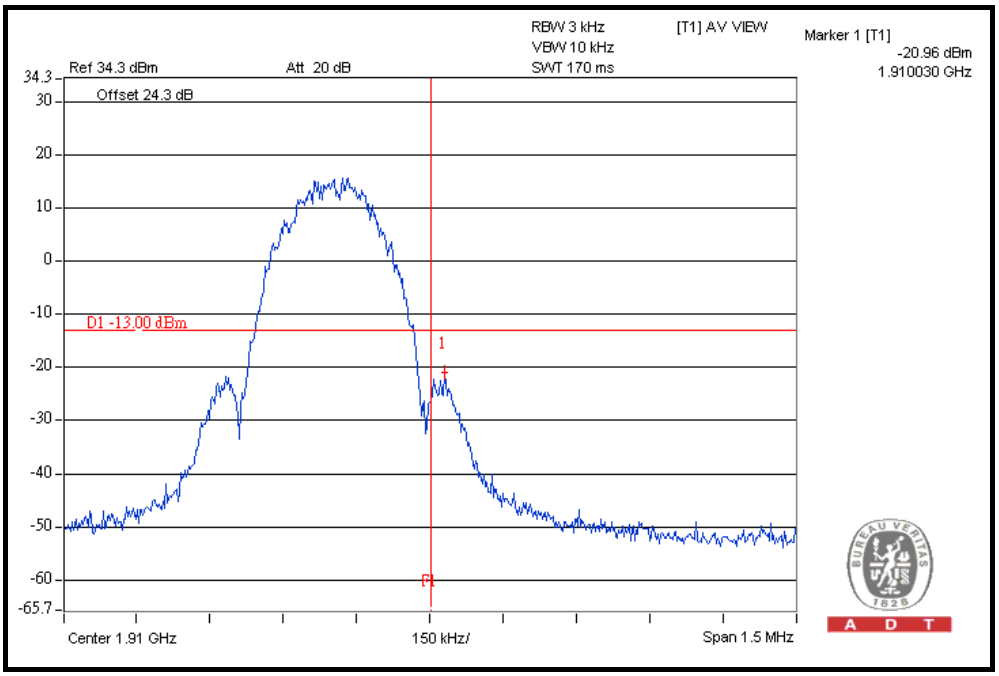


FOR E-GPRS MODE (UP-LINK WITH 1 TIME SLOT)

LOWER BAND EDGE



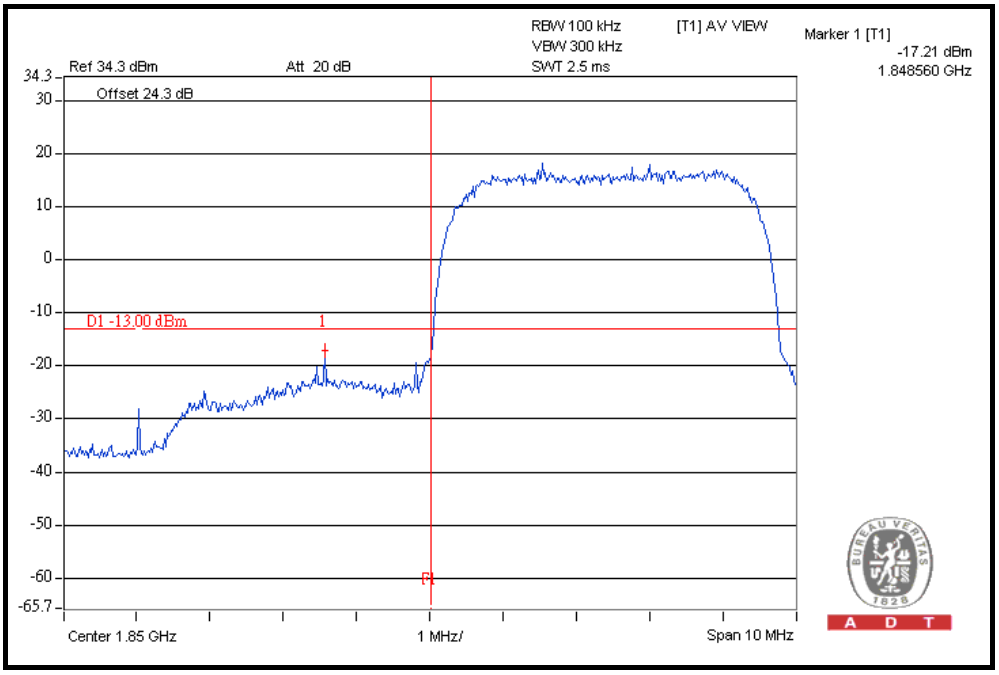
HIGHER BAND EDGE



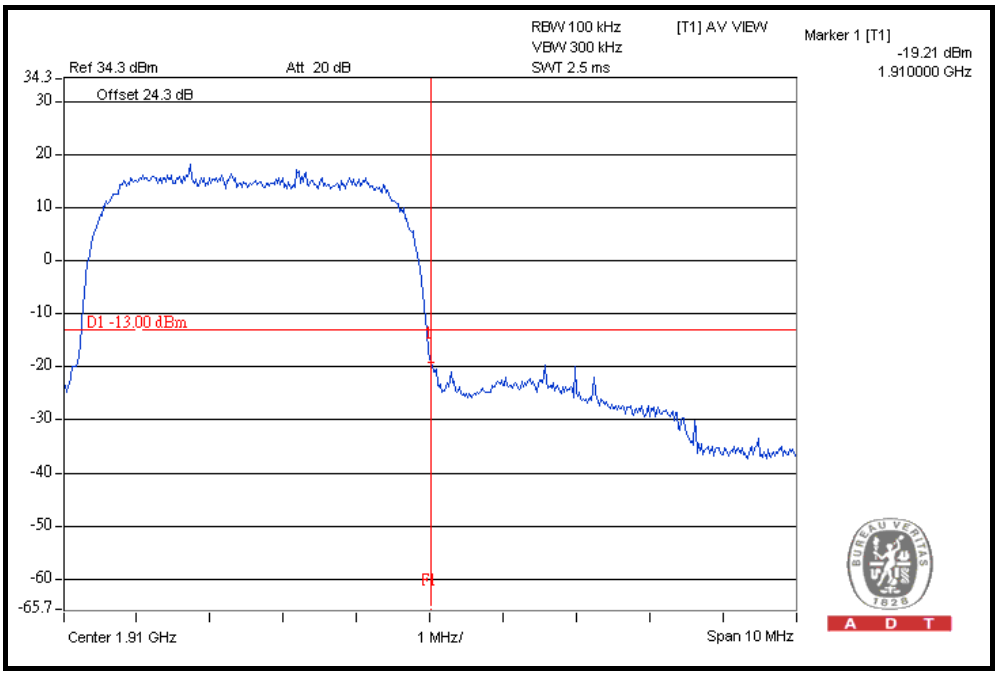
FOR WCDMA:

WCDMA-RMC MODE

LOWER BAND EDGE

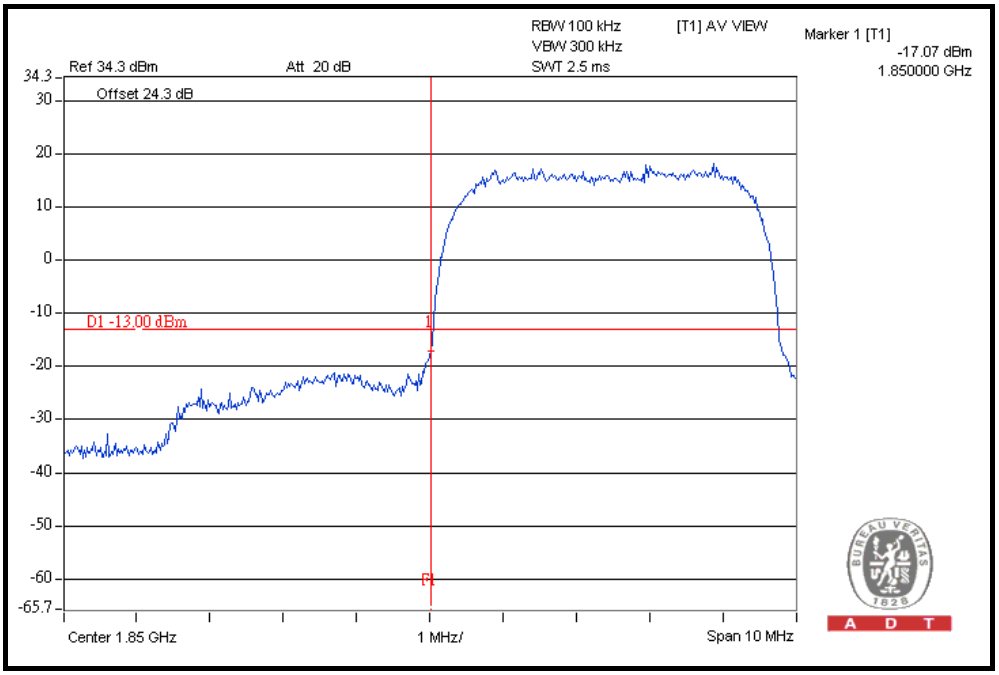


HIGHER BAND EDGE

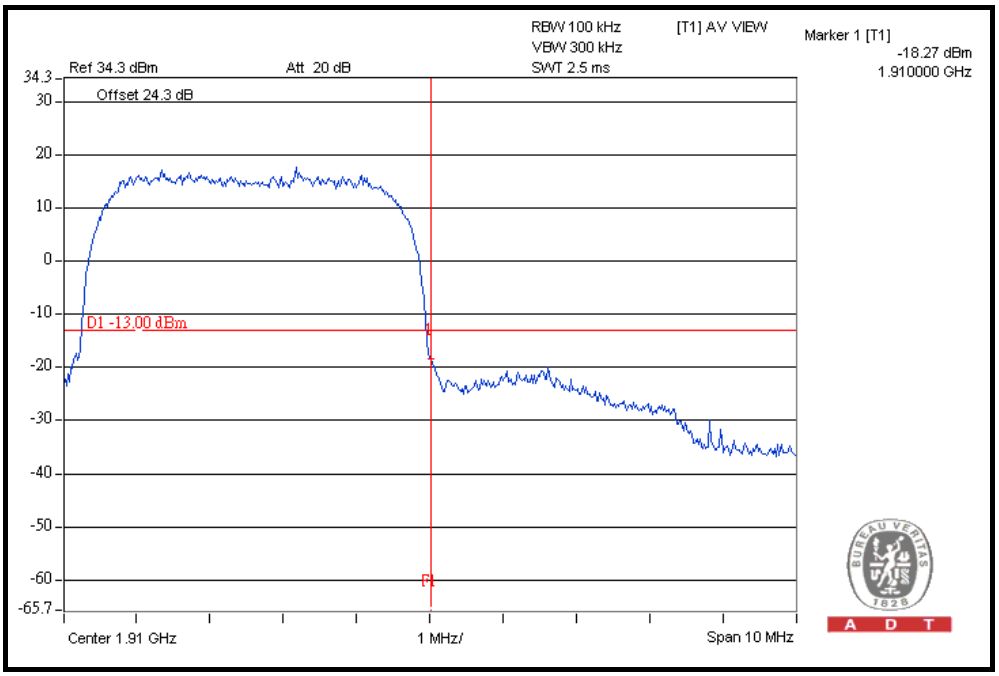


WCDMA-AMR MODE

LOWER BAND EDGE

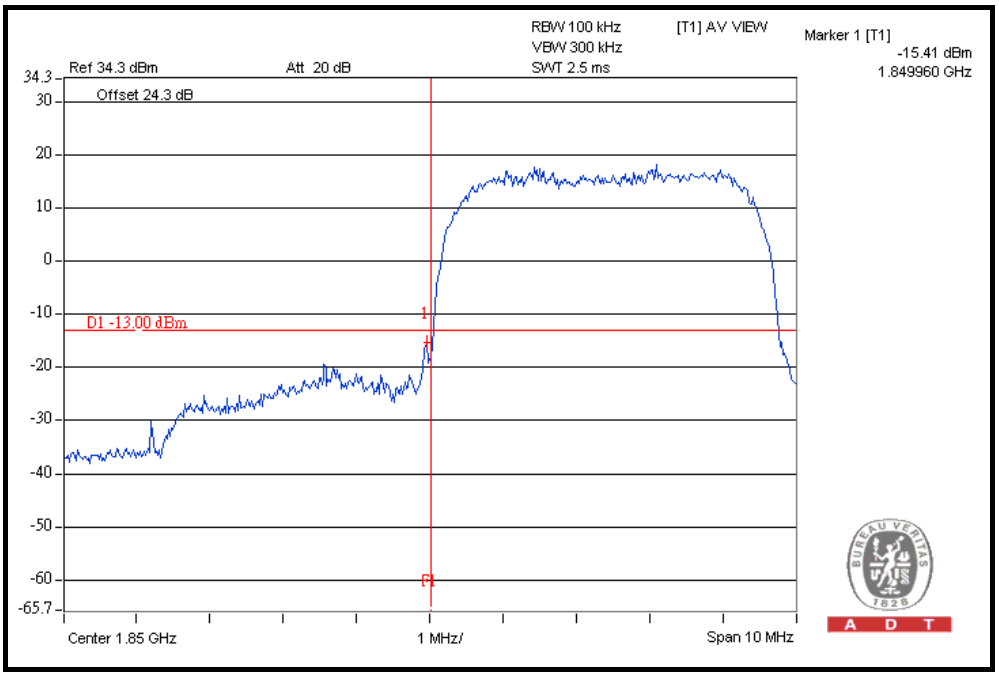


HIGHER BAND EDGE

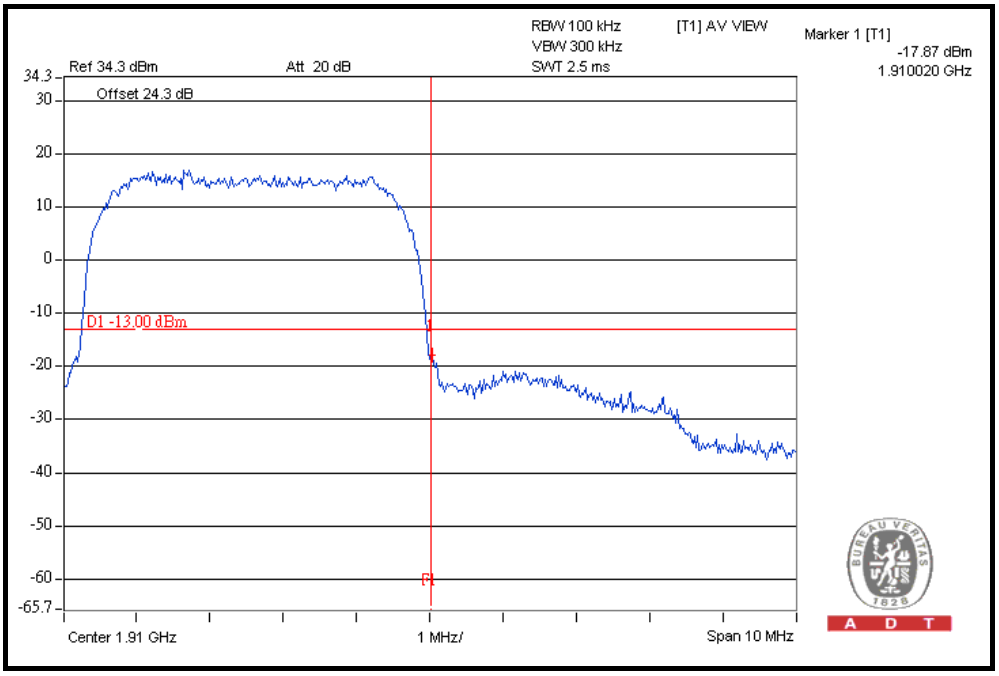


FOR HSDPA MODE

LOWER BAND EDGE



HIGHER BAND EDGE



4.5 CONDUCTED SPURIOUS EMISSIONS

4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

In the FCC 24.238(a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB. The specified minimum attenuation becomes 43dB and the limit of emission equal to –13dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Jan. 11, 2011	Jan. 10, 2012
Wainwright Instruments Band Reject Filter	WRCG 824/849-810/ 863-60/9SS	SN1	Mar. 25, 2010	Mar. 24, 2011
WI Highpass filter	WHK1.5/15G-10ST	SN1	Mar. 30, 2010	Mar. 29, 2011
Mini-Circuits Power Splitter	ZN2PD-9G	NA	Jun. 25, 2010	Jun. 24, 2011
RF cable	SUCOFLEX 104	274403/4	Aug. 20, 2010	Aug. 19, 2011
RF cable	SUCOFLEX 104	250729/4	Aug. 19, 2010	Aug. 18, 2011
RF cable	SUCOFLEX 104	214377/4	Aug. 19, 2010	Aug. 18, 2011
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

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

4.5.3 TEST PROCEDURE

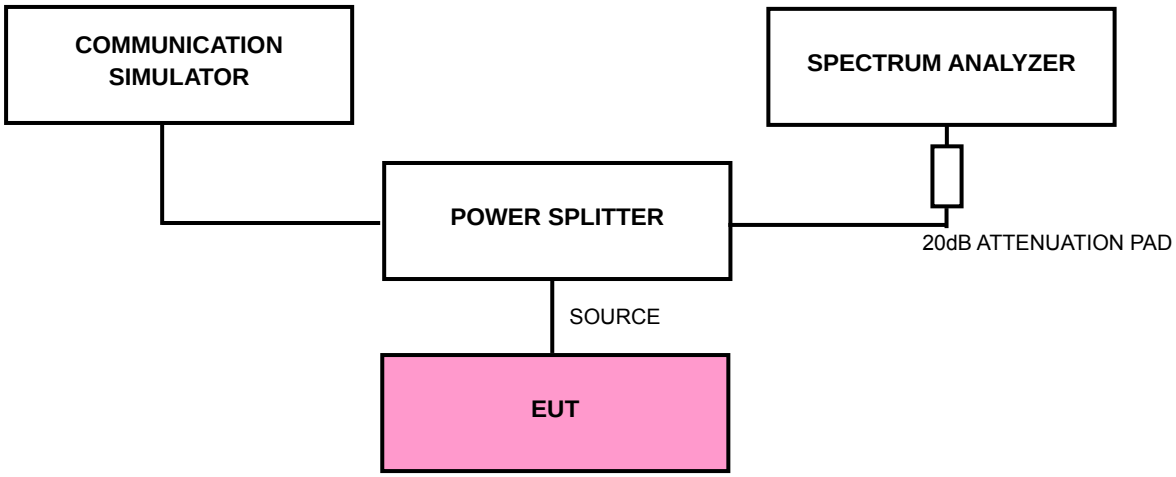
a. The EUT makes a phone call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 512, 661 and 810 (GSM) / 9262, 9400 and 9538 (WCDMA) (low, middle and high operational frequency range.)

b. The conducted spurious emission used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. This splitter loss and cable loss are the worst loss 24.5dB in the transmitted path track.

c. When the spectrum scanned from 9kHz 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 3kHz to 20GHz, it shall be connected to the high pass filter attenuated the carried frequency. The spectrum set set RB=1MHz, VB=3MHz .

4.5.4 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

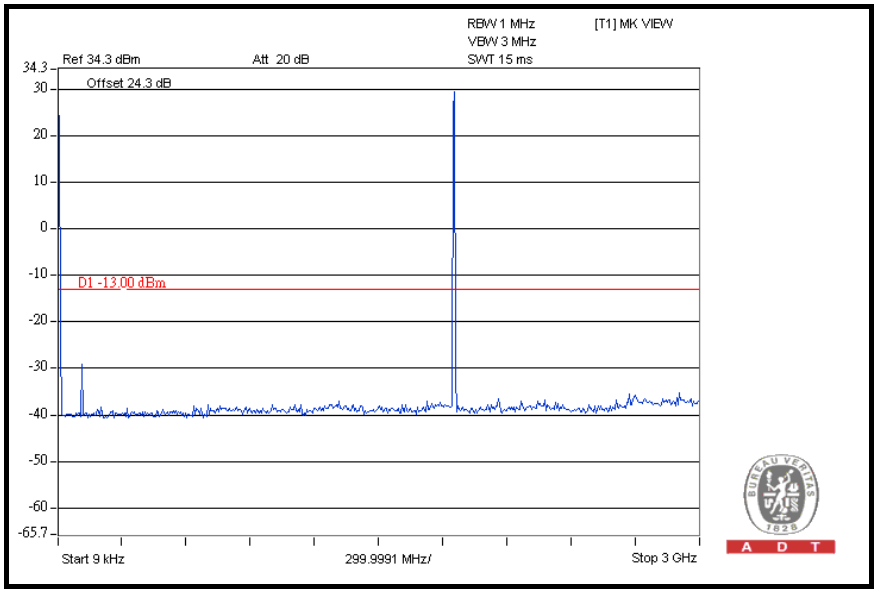
a. The EUT makes a call to the communication simulator.

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

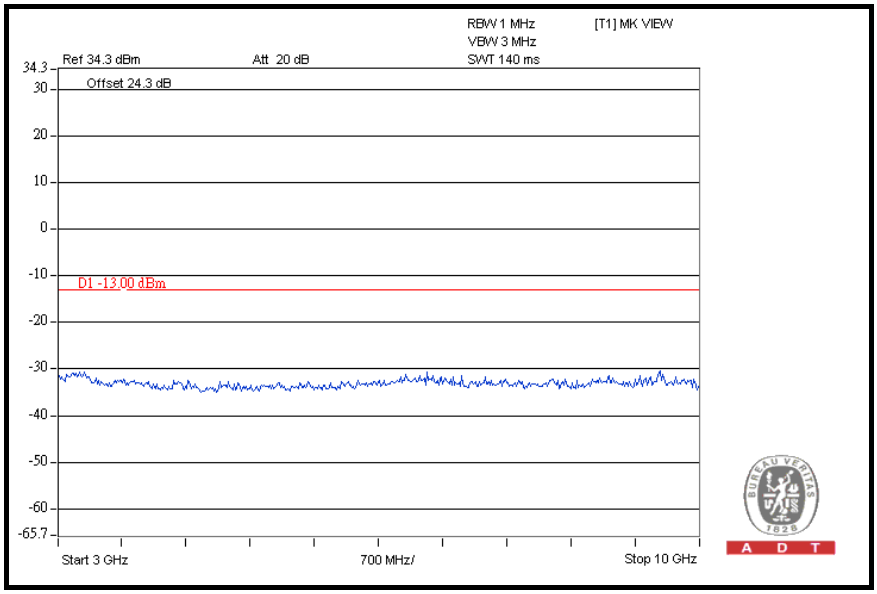
4.5.6 TEST RESULTS

FOR GSM:

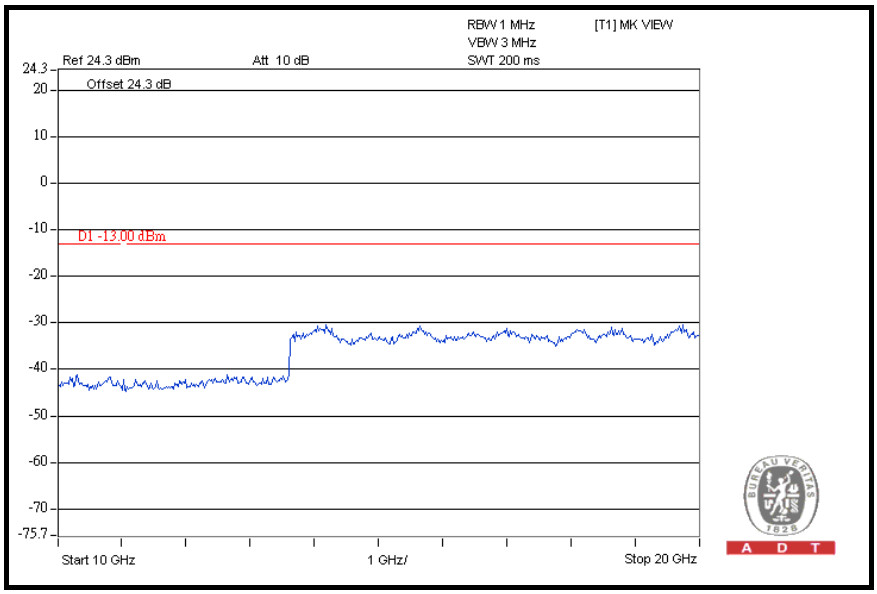
CH 512: 9kHz ~ 3GHz



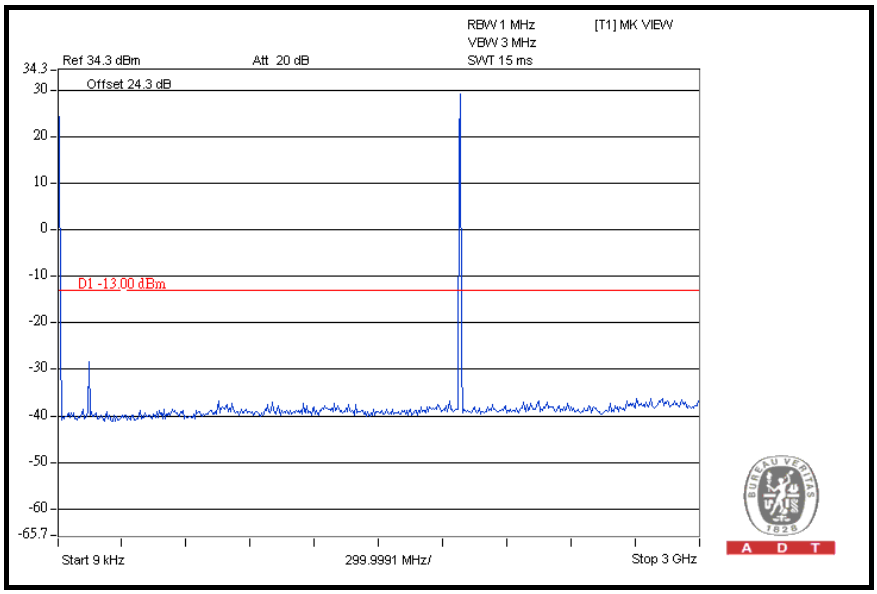
3GHz ~ 10GHz



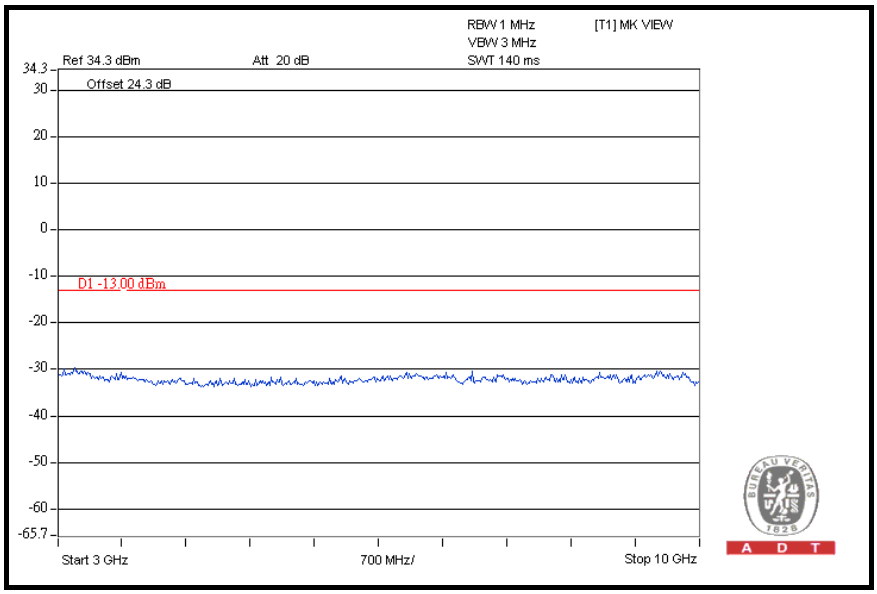
10GHz ~ 20GHz



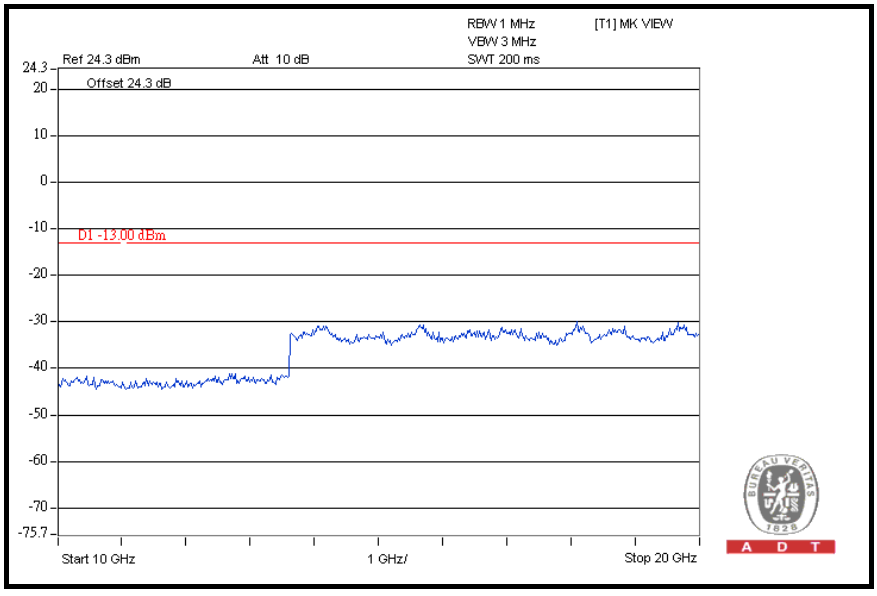
CH 661: 9kHz ~ 3GHz



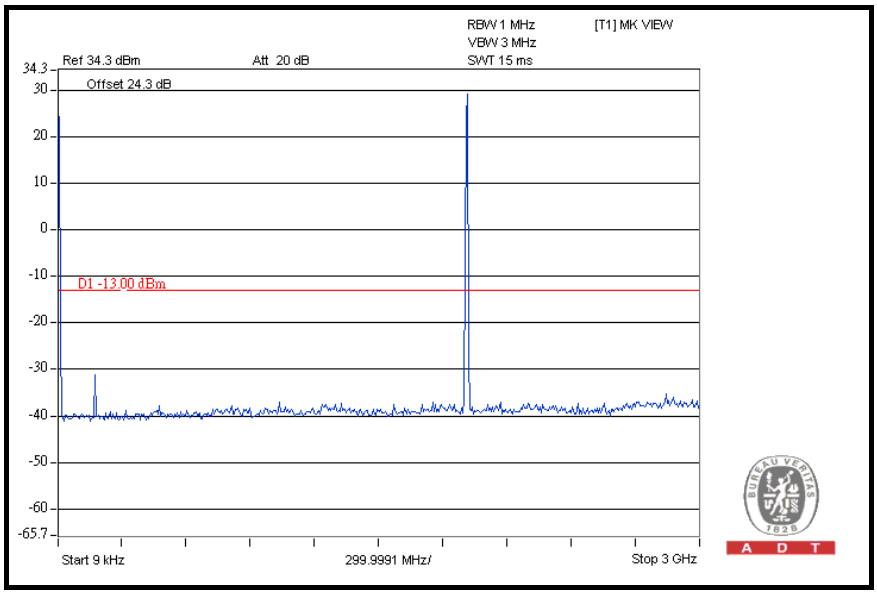
3GHz ~ 10GHz



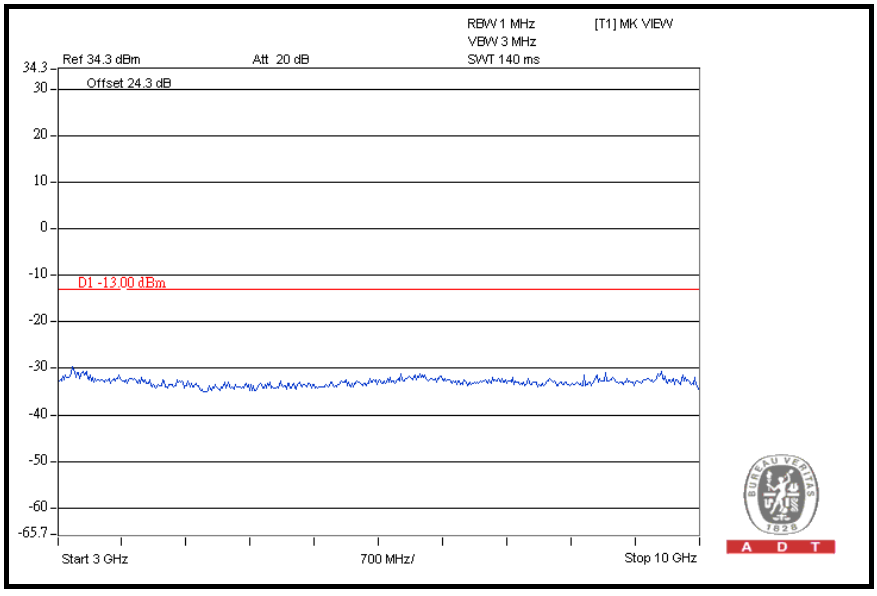
10GHz ~ 20GHz



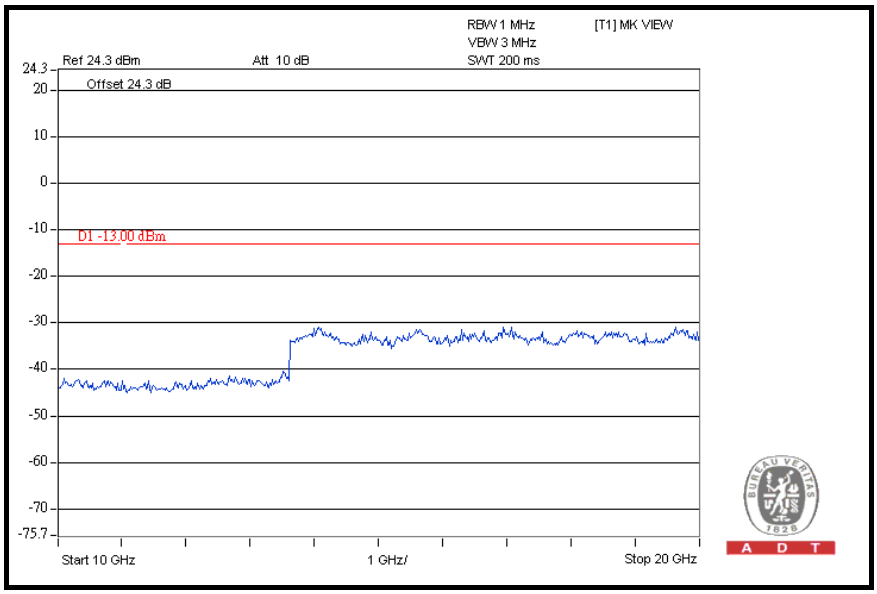
CH 810: 9kHz ~ 3GHz



3GHz ~ 10GHz

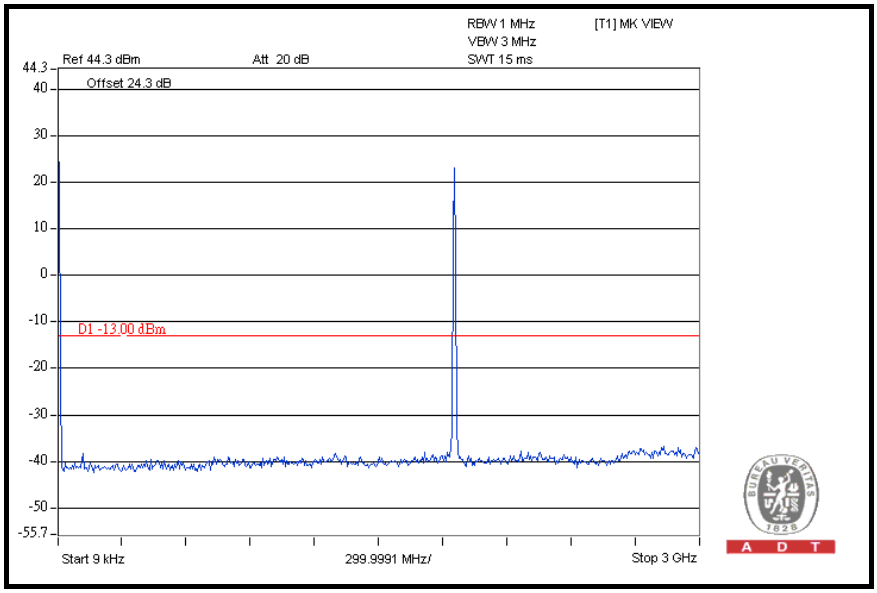


10GHz ~ 20GHz

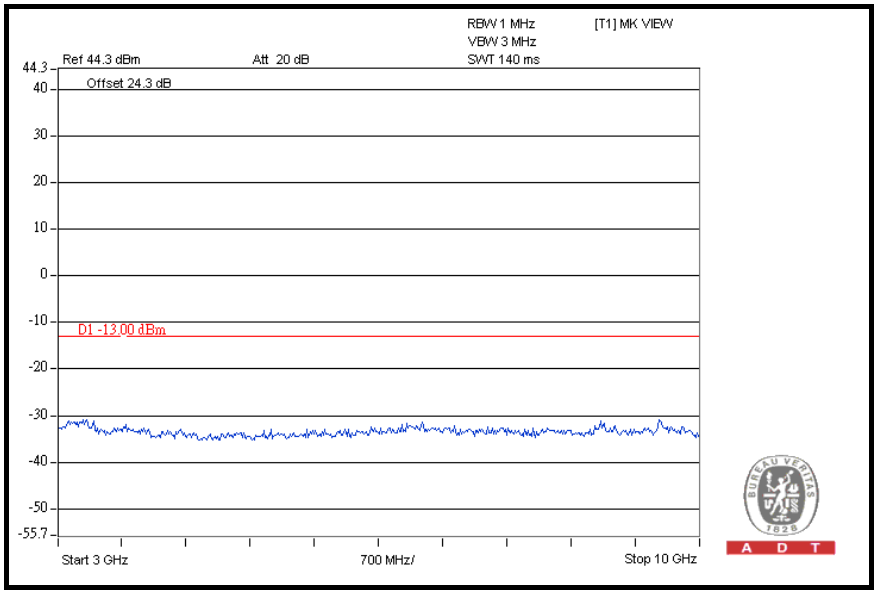

RBW 1 MHz
VBW 3 MHz
SWT 200 ms
[T1] MK VIEW
Ref 24.3 dBm
Att 10 dB
Offset 24.3 dB
24.3
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75.7
D1 -13.00 dBm
Start 10 GHz
1 GHz/
Stop 20 GHz

FOR WCDMA:

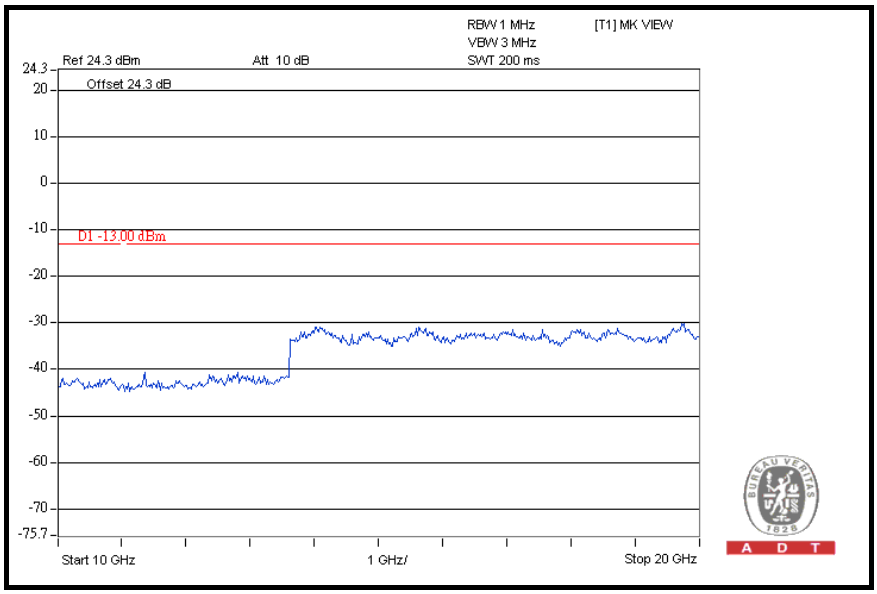
CH 9262: 9kHz ~ 3GHz



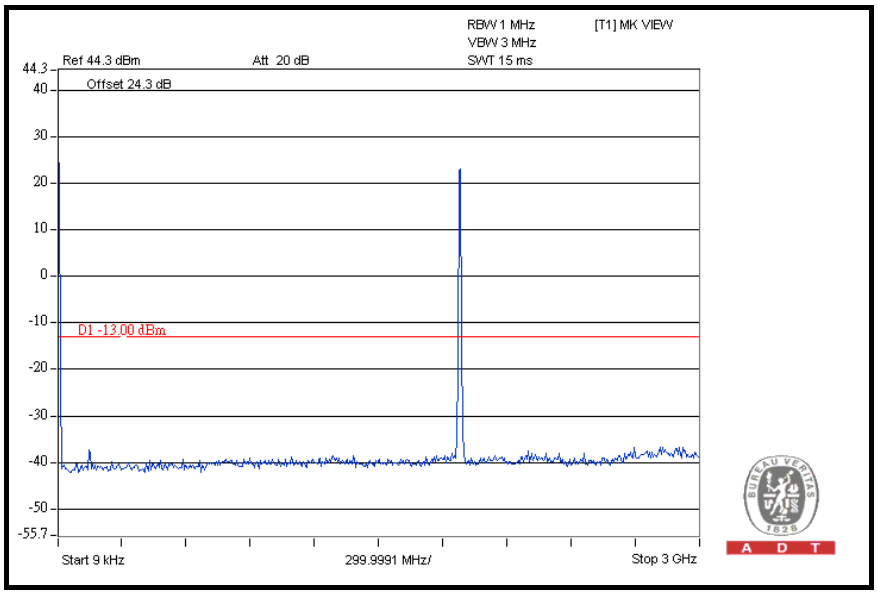
3GHz ~ 10GHz



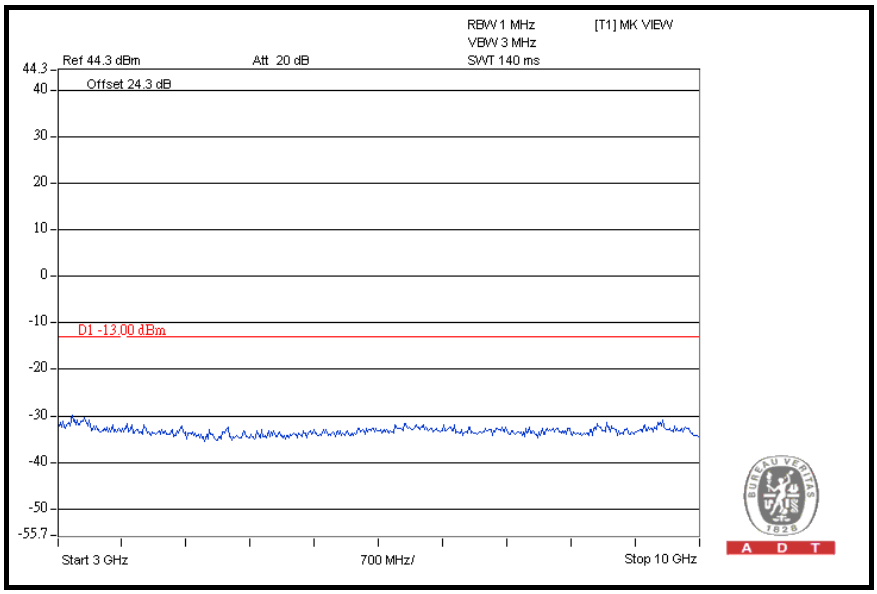
10GHz ~ 20GHz



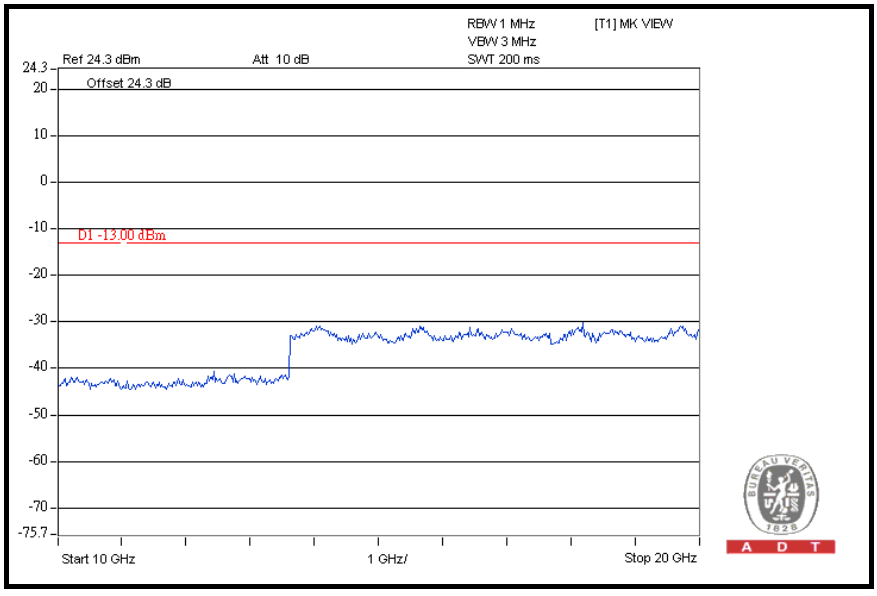
CH 9400: 9kHz ~ 3GHz



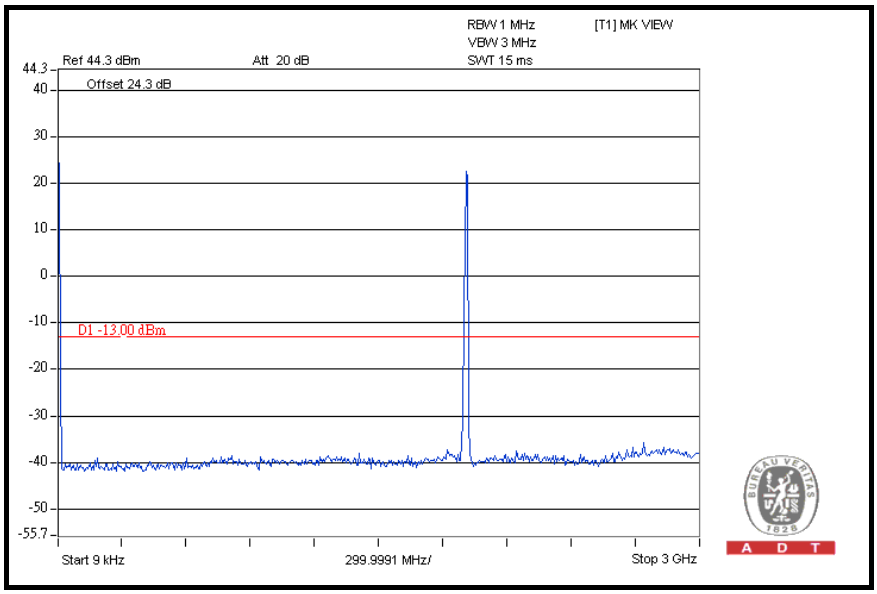
3GHz ~ 10GHz



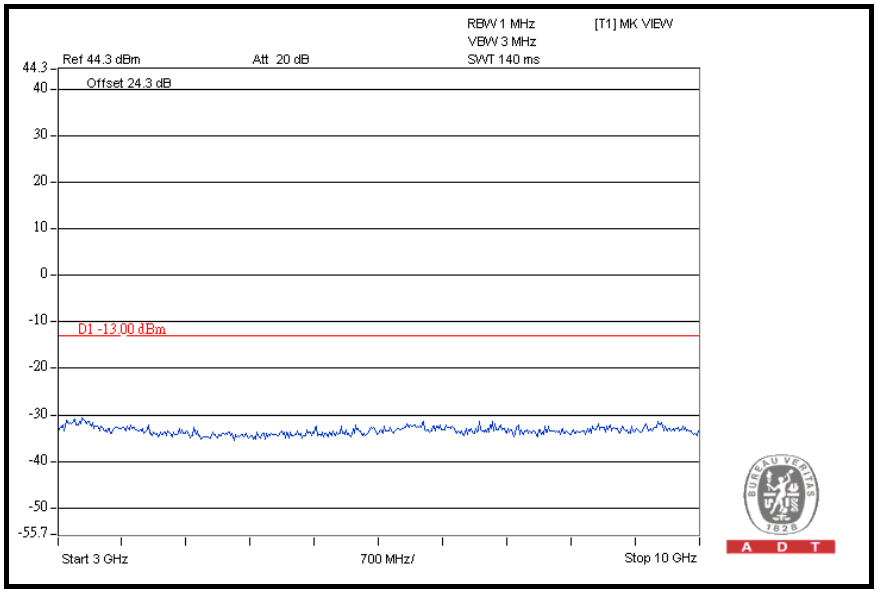
10GHz ~ 20GHz



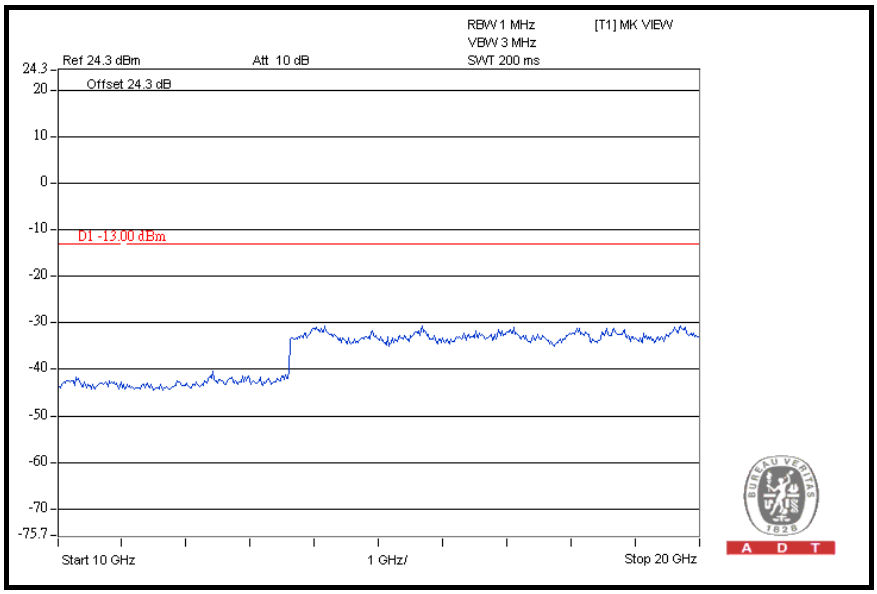
CH 9538: 9kHz ~ 3GHz



3GHz ~ 10GHz



10GHz ~ 20GHz


RBW 1 MHz
VBW 3 MHz
SWT 200 ms
[T1] MK VIEW
Ref 24.3 dBm
Att 10 dB
Offset 24.3 dB
24.3
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75.7
D1 -13.00 dBm
Start 10 GHz
1 GHz/
Stop 20 GHz

4.6 RADIATED EMISSION MEASUREMENT (BELOW 1GHz)

4.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 24.238(a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB. The emission of limit equal to –13dBm. So the limit of emission is the same absolute specified line.

LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBuV/m) (NOTE)
-13	82.2

NOTE: The following formula is used to convert the equipment radiated power to field strength.

$$E = [1000000\sqrt{(30P)}] / 3 \text{ uV/m, where P is Watts.}$$

4.6.2 TEST INSTRUMENTS

Same as 4.1.2.

4.6.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

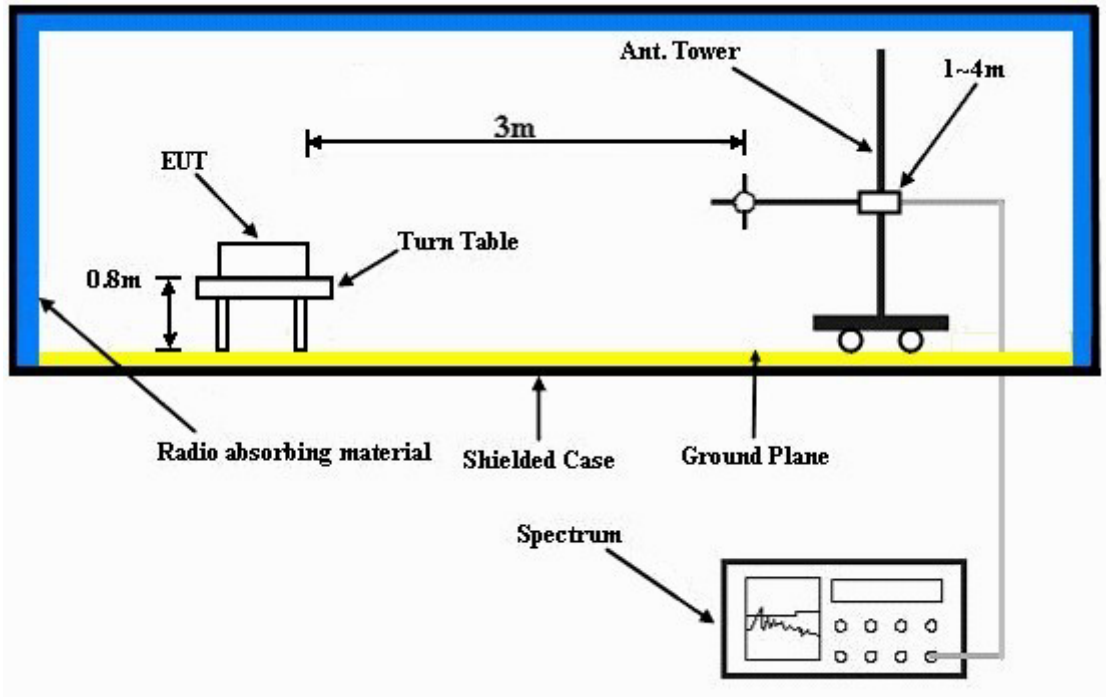
f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



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

4.6.6 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.

4.6.7 TEST RESULTS

FOR GSM:

MODE	TX channel 810	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	INPUT POWER	120Vac, 60 Hz
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	57.21	40.3	82.2	-42.0	1.50 H	352	26.8	13.5
2	158.30	46.9	82.2	-35.4	1.50 H	274	33.1	13.8
3	230.22	43.7	82.2	-38.6	1.25 H	358	31.7	12.0
4	282.71	36.2	82.2	-46.1	1.00 H	316	22.8	13.4
5	426.55	39.7	82.2	-42.6	2.00 H	97	22.7	17.0
6	832.83	42.9	82.2	-39.4	1.50 H	151	17.3	25.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	41.66	51.7	82.2	-30.6	1.00 V	73	39.2	12.5
2	148.58	48.1	82.2	-34.2	1.00 V	82	34.3	13.8
3	234.11	41.0	82.2	-41.3	1.00 V	103	28.8	12.2
4	284.65	37.8	82.2	-44.5	1.25 V	10	24.3	13.5
5	346.85	33.9	82.2	-48.4	1.25 V	13	19.1	14.8
6	688.98	39.1	82.2	-43.2	1.50 V	22	16.4	22.7

NOTE:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. This is valid for all 3 channels.

FOR WCDMA:

MODE	TX channel 9538	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	INPUT POWER	120Vac, 60 Hz
TESTED BY	Sun Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	59.16	38.1	82.2	-44.2	2.00 H	19	24.6	13.5
2	109.70	38.0	82.2	-44.3	1.50 H	301	27.4	10.6
3	152.46	46.0	82.2	-36.3	2.00 H	289	32.1	13.9
4	234.11	41.5	82.2	-40.8	1.25 H	166	29.3	12.2
5	329.36	34.7	82.2	-47.6	1.00 H	10	20.3	14.4
6	665.65	33.5	82.2	-48.8	1.50 H	43	11.0	22.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	39.72	51.2	82.2	-31.1	1.25 V	94	38.7	12.5
2	154.41	46.0	82.2	-36.3	1.00 V	19	32.1	13.9
3	232.16	39.3	82.2	-43.0	1.25 V	94	27.2	12.1
4	286.59	35.9	82.2	-46.4	1.00 V	10	22.4	13.5
5	344.91	33.0	82.2	-49.3	1.50 V	121	18.2	14.8
6	665.65	36.1	82.2	-46.2	1.50 V	46	13.6	22.5

NOTE:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. This is valid for all 3 channels.

4.7 RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)

4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 24.238(a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB. The specified minimum attenuation becomes 43dB and 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

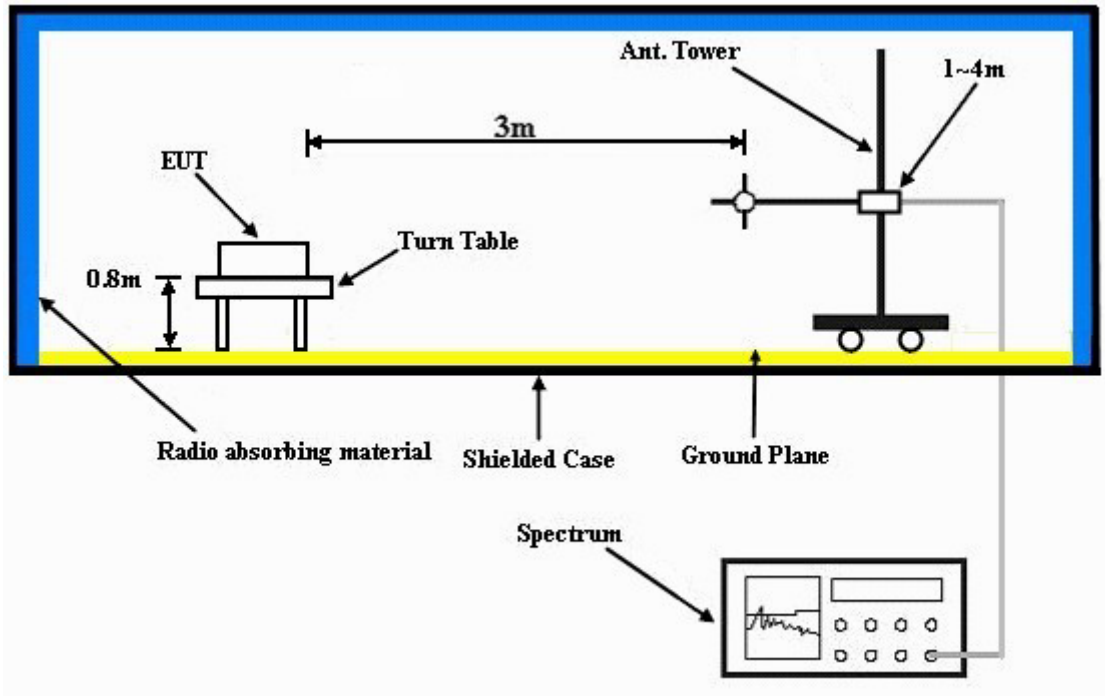
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

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

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.

4.7.7 TEST RESULTS

FOR GSM:

MODE	TX channel 512	**FREQUENCY RANGE**	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	**INPUT POWER**	120Vac, 60 Hz
TESTED BY	Sun Lin		

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	3700.4	49.0	-13.0	-55.7	9.9	-45.8
2	5550.6	47.9	-13.0	-55.7	9.7	-46.0
3	7400.8	57.2	-13.0	-44.8	7.9	-36.9
4	9251.0	52.2	-13.0	-49.3	7.5	-41.8
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	3700.4	44.1	-13.0	-60.5	9.9	-50.6
2	5550.6	48.5	-13.0	-55.5	9.7	-45.8
3	**7400.8**	**61.6**	**-13.0**	**-41.1**	**7.9**	**-33.2**
4	9251.0	52.9	-13.0	-48.8	7.5	-41.3

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

MODE	TX channel 661	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	INPUT POWER	120Vac, 60 Hz
TESTED BY	Sun Lin		

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	3760	44.4	-13.0	-59.6	9.9	-49.7
2	5640	44.5	-13.0	-59.4	9.6	-49.8
3	7520	55.4	-13.0	-46.5	7.8	-38.7
4	9400	51.6	-13.0	-50.1	7.5	-42.6
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	3760	47.0	-13.0	-57.2	9.9	-47.3
2	5640	47.3	-13.0	-57.2	9.6	-47.6
3	7520	54.4	-13.0	-48.2	7.8	-40.4
4	9400	52.4	-13.0	-49.4	7.5	-41.9

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

MODE	TX channel 810	**FREQUENCY RANGE**	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	**INPUT POWER**	120Vac, 60 Hz
TESTED BY	Sun Lin		

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	3819.6	47.4	-13.0	-57.2	9.9	-47.3
2	5729.4	43.9	-13.0	-60.4	9.6	-50.8
3	7639.2	53.7	-13.0	-48.5	7.8	-40.7
4	9549.0	53.1	-13.0	-48.4	7.5	-40.9
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	3819.6	49.4	-13.0	-54.5	9.9	-44.6
2	5729.4	47.3	-13.0	-56.3	9.6	-46.7
3	7639.2	54.2	-13.0	-47.9	7.8	-40.1
4	9549.0	53.8	-13.0	-48.3	7.5	-40.8

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

FOR WCDMA:

MODE	TX channel 9262	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	INPUT POWER	120Vac, 60 Hz
TESTED BY	Sun Lin		

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	3704.8	40.5	-13.0	-64.3	9.9	-54.4
2	5557.2	43.6	-13.0	-61.0	9.7	-51.3
3	7409.6	49.8	-13.0	-52.8	7.9	-44.9
4	9262.0	52.6	-13.0	-49.6	7.5	-42.1
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	3704.8	41.0	-13.0	-63.5	9.9	-53.6
2	5557.2	44.4	-13.0	-59.6	9.7	-49.9
3	7409.6	50.7	-13.0	-51.7	7.9	-43.8
4	9262.0	51.9	-13.0	-50.2	7.5	-42.7

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

MODE	TX channel 9400	**FREQUENCY RANGE**	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	**INPUT POWER**	120Vac, 60 Hz
TESTED BY	Sun Lin		

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	3760	39.9	-13.0	-64.0	9.9	-54.1
2	5640	45.0	-13.0	-58.8	9.6	-49.2
3	7520	50.2	-13.0	-52.1	7.8	-44.3
4	9400	52.4	-13.0	-49.9	7.5	-42.4
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	3760	40.9	-13.0	-63.8	9.9	-53.9
2	5640	44.2	-13.0	-59.3	9.6	-49.7
3	7520	50.5	-13.0	-51.5	7.8	-43.7
4	9400	51.6	-13.0	-50.8	7.5	-43.3

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

MODE	TX channel 9538	**FREQUENCY RANGE**	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 65%RH, 1008hPa	**INPUT POWER**	120Vac, 60 Hz
TESTED BY	Sun Lin		

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	3815.2	41.3	-13.0	-63.1	9.9	-53.2
2	5722.8	45.3	-13.0	-58.7	9.6	-49.1
3	7630.4	52.1	-13.0	-50.5	7.8	-42.7
4	9538.0	52.6	-13.0	-49.2	7.5	-41.7
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	3815.2	41.8	-13.0	-62.5	9.9	-52.6
2	5722.8	44.4	-13.0	-59.5	9.6	-49.9
3	7630.4	50.5	-13.0	-52.2	7.8	-44.4
4	9538.0	51.9	-13.0	-49.8	7.5	-42.3

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

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6 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 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

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

7 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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