FCC Radio Test Report

FCC ID: Q3N-M0010A

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

Issued Date : Jan. 31, 2008
Project No. : R0801008
Equipment : Terminal
Model Name : M0010
Applicant : CIPHERLAB CO., LTD
Address : 12F.,333,Sec.2,Dunhua S. Rd.,Taipei, Twaiwan 106

Tested by:
Neutron Engineering Inc. EMC Laboratory
Date of Test:
Jan. 14, 2008 ~ Jan. 30, 2008

Testing Engineer : Jeff yy (Jeff Yang)

Technical Manager : Steven lu (Steven Lu)

Authorized Signatory : Steven lu for (Vic Chiu)

NEUTRON ENGINEERING INC.

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Shijr City, Taipei, Taiwan
TEL : (02) 2646-5426 FAX : (02) 2646-6815

NVLAP Lab Code: 200145-0 ilac-MRA TAF Testing Laboratory 0659

Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**., or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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Neutron's laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

Limitation

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

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1. CERTIFICATION

Equipment:	Terminal
Trade Name :	CIPHERLAB
Model Name :	M0010
Applicant:	CIPHERLAB CO., LTD
Date of Test :	Jan. 14, 2008 ~ Jan. 30, 2008
Test Item:	ENGINEERING SAMPLE
Standards:	47 CFR FCC Part 22 Subpart H & ANSI/ C63.4 : 2003
	47 CFR FCC Part 2 & ANSI/TIA/EIA-603-A

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-3-R0801008) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).
Test result included in this report is only for the GSM 850 part of the product.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Applied Standard: FCC Part 22 & Part 2 / IC RSS-132				
Part	Standard Section	Test Item	Judgment	Remark
4.1	2.1047(d)	Modulation Characteristics	PASS	
4.2	2.1046/22.913(a)	Radiated RF Output	PASS	
4.3	2.1049(h)	99% Occupied Bandwidth	PASS	
4.4	2.1051/22.917	Spurious Emissions at Antenna Terminals	PASS	
4.5	2.1053/22.917	Spurious Radiated Emissions	PASS	
4.6	22.917	Band Edge Emissions	PASS	
4.7	2.1055/22.355	Frequency Stability	PASS	
4.8	15.207	Conducted Emission	PASS	

NOTE:

(1)” N/A” denotes test is not applicable in this Test Report

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **C01/OS02** at the location of No.132-1, Lane 329, Sec. 2, Palain Road, Shijr City, Taipei, Taiwan.
Neutron's test firm number is 95335

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
OS-01	ANSI	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
OS-02	ANSI	30MHz ~ 200MHz	V	2.48	
		30MHz ~ 200MHz	H	2.16	
		200MHz ~ 1,000MHz	V	2.50	
		200MHz ~ 1,000MHz	H	2.66	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

<table>
<tr><td>Equipment</td><td>Terminal</td></tr>
<tr><td>Trade Name</td><td>CIPHERLAB</td></tr>
<tr><td>Model Name</td><td>M0010</td></tr>
<tr><td>OEM Brand/Model Name</td><td>N/A</td></tr>
<tr><td>Model Difference</td><td>N/A</td></tr>
<tr><td>Product Description</td><td>The EUT is a Terminal
<table>
<tr><td>Modulation Type:</td><td>GMSK /8-PSK</td></tr>
<tr><td>Channel Band Width (99%)</td><td>315.4KHz</td></tr>
<tr><td>Number Of Channel</td><td>124 CH</td></tr>
<tr><td>TX Frequency
RX Frequency</td><td>824.2MHz~848.8MHz
869.2MHz~893.8MHz</td></tr>
<tr><td>Antenna Type</td><td>Please see Note 3.</td></tr>
<tr><td>Conducted Output Power</td><td>GPRS: 29.70 dBm(0.933W)
EDGE: 23.40 dBm(0.219W)</td></tr>
</table>
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.</td></tr>
<tr><td>Channel List</td><td>Please refer to the Note 2.</td></tr>
<tr><td>Power Source</td><td>DC Voltage supplied from AC/DC adapter & Li-ion battery
#AC DC Adapter
Brand name:LEADER ;Model name:NU40-2060330-I3
#Li-ion battery
Brand name:CIPHERLAB ;Model name:BA-0011A8</td></tr>
<tr><td>Power Rating</td><td>#AC/DC Adapter
I/P 100-240VAC~ 50/60Hz, 1.2A O/P 6.0V, 3.3A
Li-ion battery
3.7Vdc 1800mAh</td></tr>
<tr><td>Connecting I/O Port(s)</td><td>Please refer to the User's Manual</td></tr>
<tr><td>Products Covered</td><td>N/A</td></tr>
</table>

Note:

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

2.

Freqeuncy Band	Channel No.	Frequency
824~849MHz	128	824.2 MHz
	129	824.4 MHz
	:	:
	189	836.4 MHz
	190	836.6 MHz
	191	836.8 MHz
	:	:
	250	848.6 MHz
	251	848.8 MHz

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	ACX	AT7020-E3R0HBAT	CHIP Antenna	U.FL	1.3
2	ACX	AT7020-E3R0HBAT	CHIP Antenna	U.FL	1.3
3	CIPHERLAB	9400RFIDA	Loop Antenna	N/A	N/A
4	BJTEK	IA-100	Dipole Antenna	N/A	850 : 2.54dBi 900 : -5.97dBi 1800 : 1.47dBi 1900 : 3.72dBi

Ant.1 for WLAN function
Ant.2 for Bluetooth function
Ant.3 for RFID function
Ant.4 for GSM function

4. The hardware version: 1.1
5. The software version: 1.1
6. The EUT IMEI Code: 355634008134337.

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Items	Worst TX Mode	Channel	Antenna
Radiated RF Output	GPRS/EDGE	128/190/251	4
Spurious Radiated Emissions	GPRS;Note(2)/(3)	128/190/251	4
Band Edge Emissions	GPRS;Note(2)	128/251	4
Frequency Stability	GPRS	190	NA
99% Occupied Bandwidth	GPRS	128/190/251	NA
Spurious Emissions at Antenna Terminals	GPRS/EDGE	128/190/251	NA

For Conducted Emission	
Final Test Mode	Description
Mode 4	Normal Link with cradle use (full system)

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis. The worst case was found positioned on Z-plane. Therefore only the test data of this Z-plane was used for radiated emission measurement test.

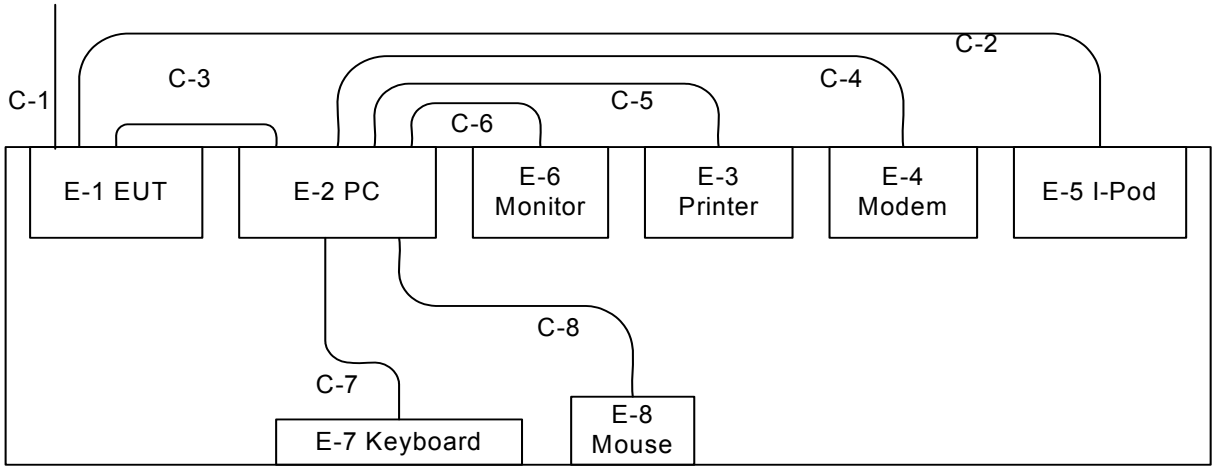
(3) Below 1GHz, the channel 128, 190 and 251 were pre-tested in chamber.
The channel 128, the worst case, was chosen for final test.
Above 1GHz, the channel 128, 190 and 251 were tested individually.

3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of GSM 850
During the test, Power Control level was set to 5, it is chosen as the worst case.

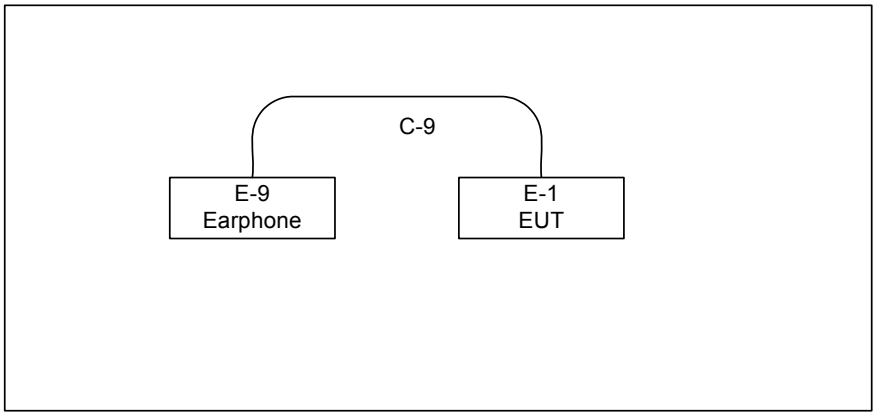
3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conduction: Normal Link with cradle use (full system)



C-1 Power Line
C-2 USB Cable
C-3 USB Cable
C-4 RS-232 Cable
C-5 LPT Cable
C-6 D-sub Cable
C-7 PS/2 Cable
C-8 PS/2 Cable

Radiated:CTX Mode



C-9 Audio Line

3.5 DESCRIPTION OF SUPPORT UNITS

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

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Terminal	CIPHERLAB	M0010	Q3N-M0010A	N/A	EUT
E-2	PC	HP	HP Compaq dx7300 MT	DOC	SGH71505LH	
E-3	Modem	ACEEX	DM-1414V	DOC	8041708	
E-4	Printer	SII	DPU-414	DOC	1045105A	
E-5	iPod	Apple	A1059	DOC	JQ509DCJPS9	
E-6	19" LCD Monitor	Samsung	SyncMaster 193P	GH19PH	DI19H4JXC05517A	
E-7	PS/2 K/B	DELL	M-SAW34	DOC	N/A	
E-8	PS/2 Mouse	Logitech	M-SBF69	DOC	HCA44601156	
E-9	Earphone	KOKA	DM-510	DOC	N/A	
E-10	Cradle	CIPHERLAB	A1010	DOC	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	YES	1.8M	DC POWER LINE
C-2	YES	NO	1.8M	
C-3	YES	NO	1.8M	
C-4	YES	NO	1.8M	
C-5	YES	NO	1.8M	
C-6	YES	YES	1.8M	
C-7	NO	NO	1.8M	
C-8	NO	NO	1.8M	
C-9	NO	NO	1.8M	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

4. TEST RESULT

4.1 MODULATION CHARACTERISTICS

4.1.1 LImit

A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

4.1.2 DESCRIPTION OF MODULATION TECHNIQUE

	GPRS	EGRPS (EDGE)
Modulation	GMSK	8PSK
Symbol rate	270 ksym/s	270 ksym/s
Modulation bit rate	270 kb/s	810 kb/s
Radio data rate per time slot	22.8 kbs/s	69.2 kbs/s
User data rate per time slot	20 kb/s(CS4)	59.2 kb/s(MCS9)
User data rate (8 time slots)	160 kb/s	473.6 kb/s

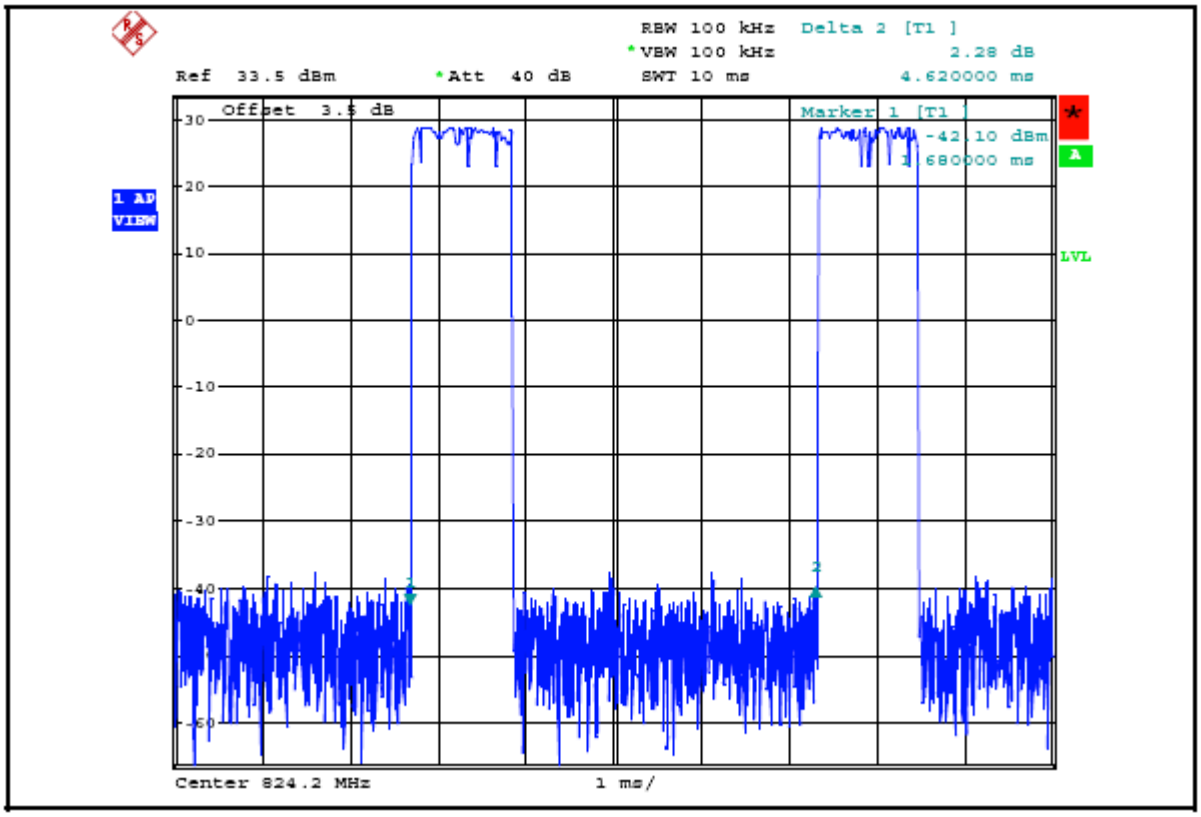
4.1.3 DESIGNATION OF EMISSIONS

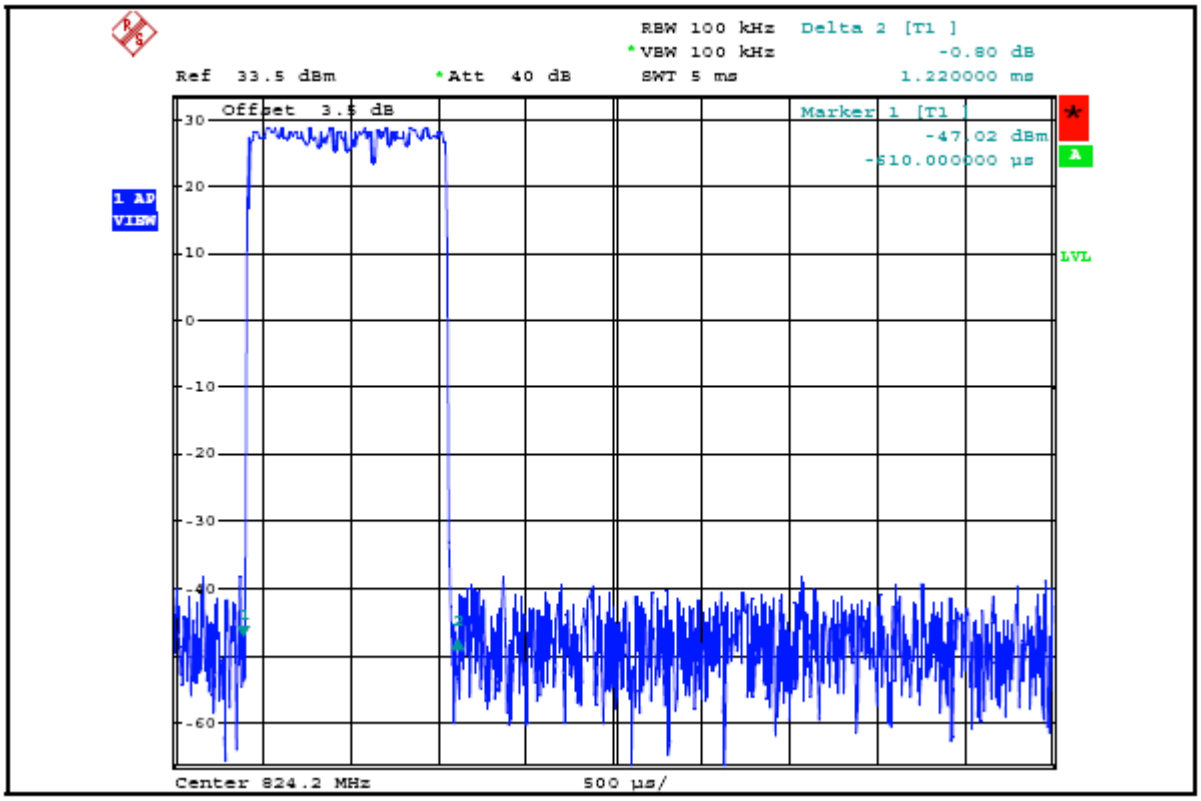
Emissions bandwidth is about 300kHz for GSMK (GSM/GPRS mode) and 8PSK (EDGE mode).
For GMSK = 300KGXW
For 8PSK = 300KG7W

According to FCC 2.1047(d), the system is using digital modulation and accomplished with the GSM requirement. It uses narrowband TDMA. Eight simultaneous calls can occupy the same radio frequency.

There are 124 channels and channel spacing is 200kHz. The frequency band 824.2~848.8MHz is allocated to the up-link and 869.2~893.8MHz to the down-link. The up-link and down-link channel space is 45MHz and is duplex at the same time.

4.1.4 MODULATION PLOT OF ACTIVE TIME SLOT 8 MODULATED FRAME





4.2 RADIATED RF OUTPUT POWER MEASUREMENT

4.2.1 LIMIT

The Radiated Peak Output Power shall be according to the specific rule Part 22.913(a) that "Mobile/Portable station are limited to 7 watts e.i.r.p." and 22.913(a) specifed that "Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.

4.2.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

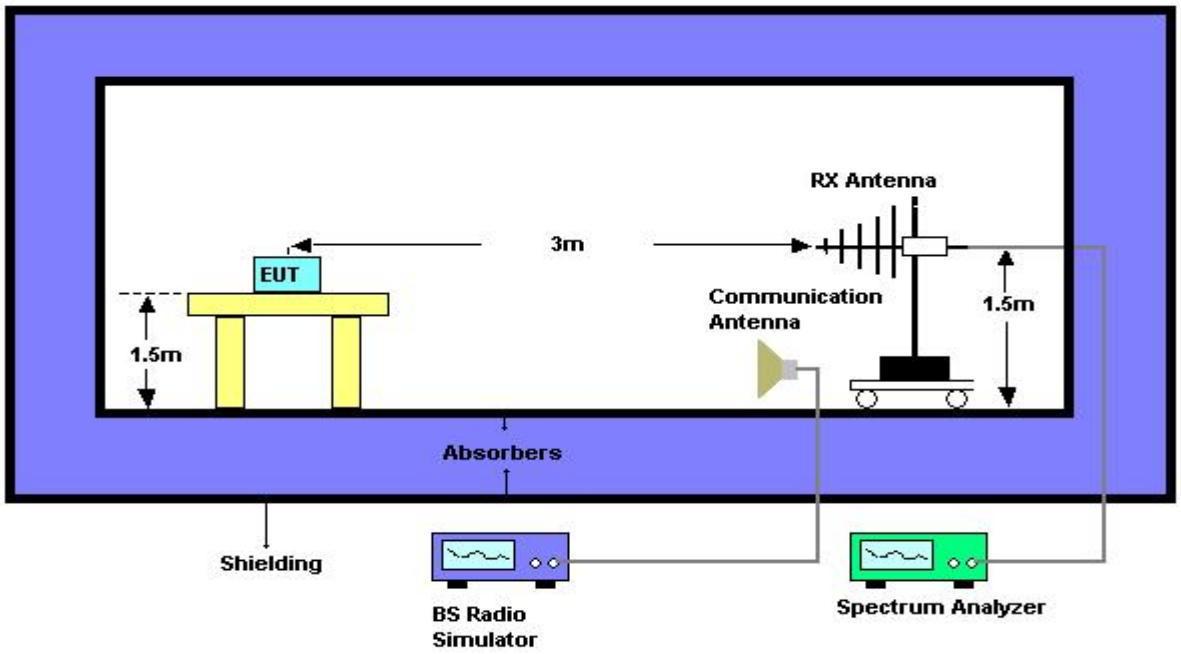
Spectrum Parameters	Setting
Attenuation	Auto
Center Frequency	Low / middle / high channels
Span Frequency	10MHz
RB / VB	3MHz / 3MHz for Peak

4.2.3 TEST PROCEDURE

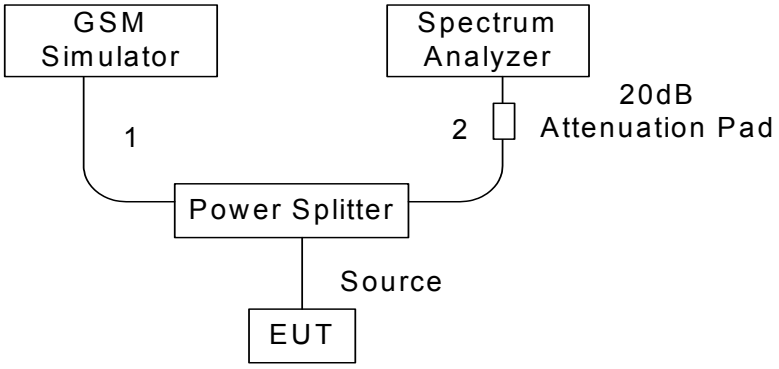
1. The EUT was set up for the maximum peak power with GPRS link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 512, 661 and 810 (low, middle and high operational frequency range).
2. The conducted peak output power used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. The path loss included the splitter loss, cable loss and 20dB pad loss. The spectrum set RB/VB 3MHz,then read peak power value and record to the test. (All transmitted path loss shall be considered in the test report data)
3. E.I.R.P peak power measurement. In the fully anechoic chamber, EUT placed on the 1.5m 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 to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
4. The substitution horn antenna is substituted for EUT at the same position, and signal generator export the CW signal to the calibration antenna. Rotated the Turn Table to find the maximum radiation power. "Raw" is the spectrum reading value, "SG" is signal generator export power, "TX Gain" is calibration antenna isotropic gain value, "TX cable" is the transmitted cable loss between the calibration antenna and signal generator. The "Factor" means that the transmission path loss is equal to "SG" - "TX cable" + "TX Gain" – "Raw".
5. Actually the real E.I.R.P peak power is equal to "Read Value" + "Factor"
6. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power=E.I.P.R power-2.15dBi.

4.2.4 TEST SETUP LAYOUT

EIRP Power Measurement



Conducted Power Measurement



4.2.5 TEST DEVIATION

There is no deviation with the original standard.

4.2.6 EUT OPERATION DURING TEST

The BS simulator was used to set the TX channel and power level and modulate the TX signal.

4.2.7 TEST RESULT OF RADIATED RF OUTPUT POWER

EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 128/190/251		
Power Control Level **:**	5		

Configuration GPRS

Channel	Frequency	Peak Output Power (dBm)	Max. Limit (dBm)	Result
128	824.2 MHz	29.10	38.45	**Complies**
190	836.6 MHz	29.40	38.45	**Complies**
251	848.8 MHz	29.70	38.45	**Complies**

Configuration EDGE

Channel	Frequency	Peak Output Power (dBm)	Max. Limit (dBm)	Result
128	824.2 MHz	23.40	38.45	**Complies**
190	836.6 MHz	21.10	38.45	**Complies**
251	848.8 MHz	18.90	38.45	**Complies**

REMARKS:

1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)
3. The EUT does employ a power control function by which the output power is controlled from +30dBm to +19dBm (nominal) by 2dB steps. Consequently the EUT meets the requirement of Part22.913(a)

4.3 99% OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 LIMIT

According to FCC 2.1049(h) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

4.3.2 MEASURING INSTRUMENTS AND SETTING

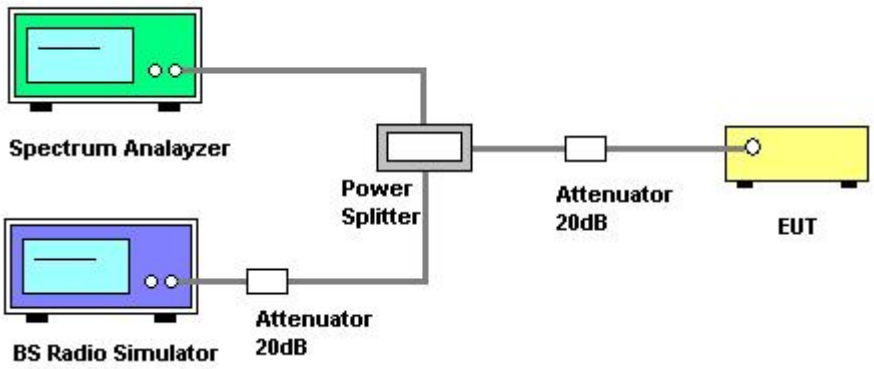
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	3 kHz
VB	3 kHz
Trace	Max Hold

4.3.3 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Used measurement function of spectrum to measure the 99% occupied bandwidth..

4.3.4 TEST SETUP LAYOUT



4.3.5 TEST DEVIATION

There is no deviation with the original standard.

4.3.6 EUT OPERATION DURING TEST

The BS simulator was used to set the TX channel and power level and modulate the TX signal.

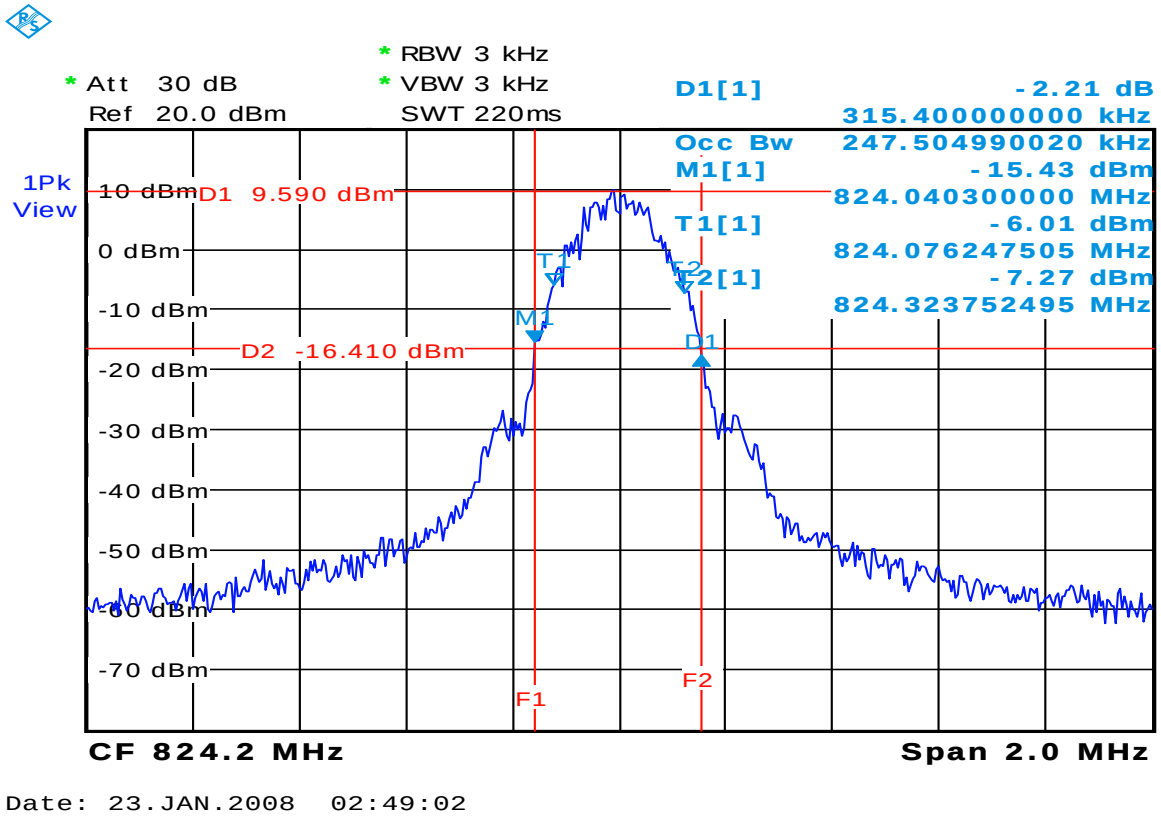
4.3.7 TEST RESULT OF 99% OCCUPIED BANDWIDTH

EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 128/190/251		

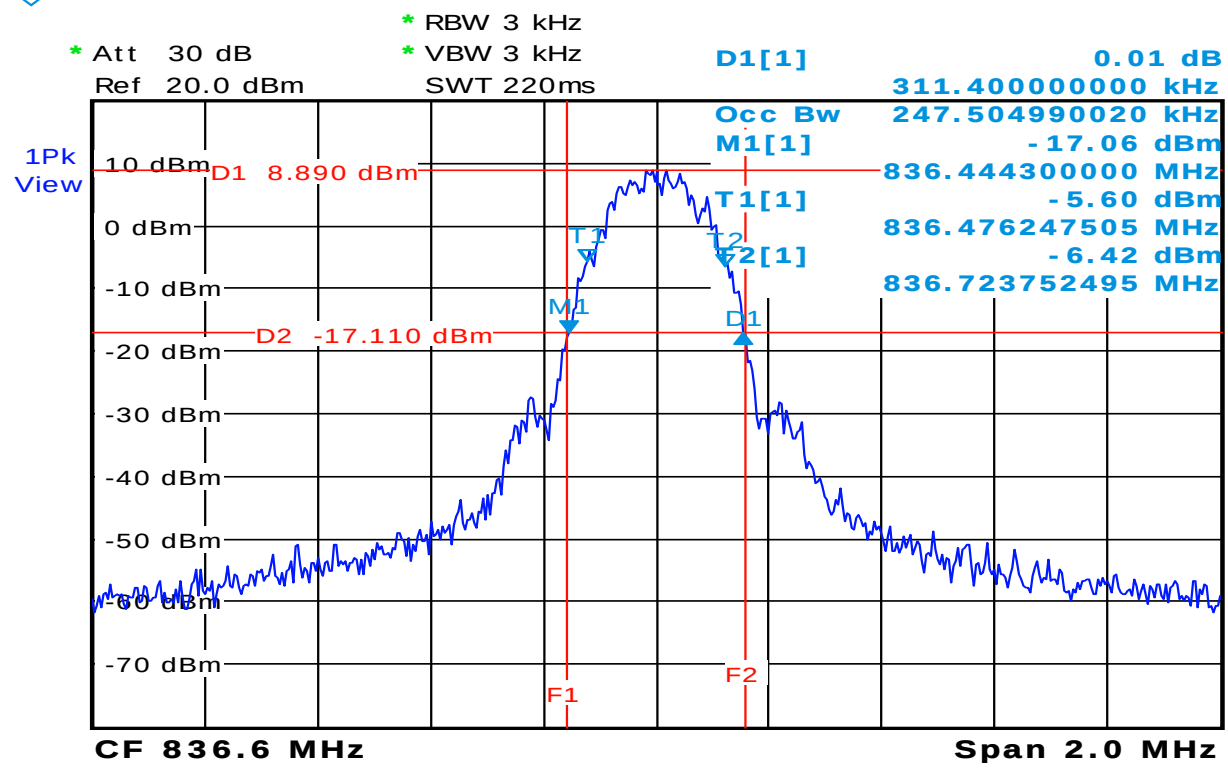
Configuration GPRS

Channel	Frequency	99% OBW (kHz)	-26dBc Bandwidth	Result
128	824.2 MHz	315.4	247.50	**Complies**
190	836.6 MHz	311.4	247.50	**Complies**
251	848.8 MHz	311.4	247.50	**Complies**

99% Occupied Bandwidth Configuration GPRS channel 128

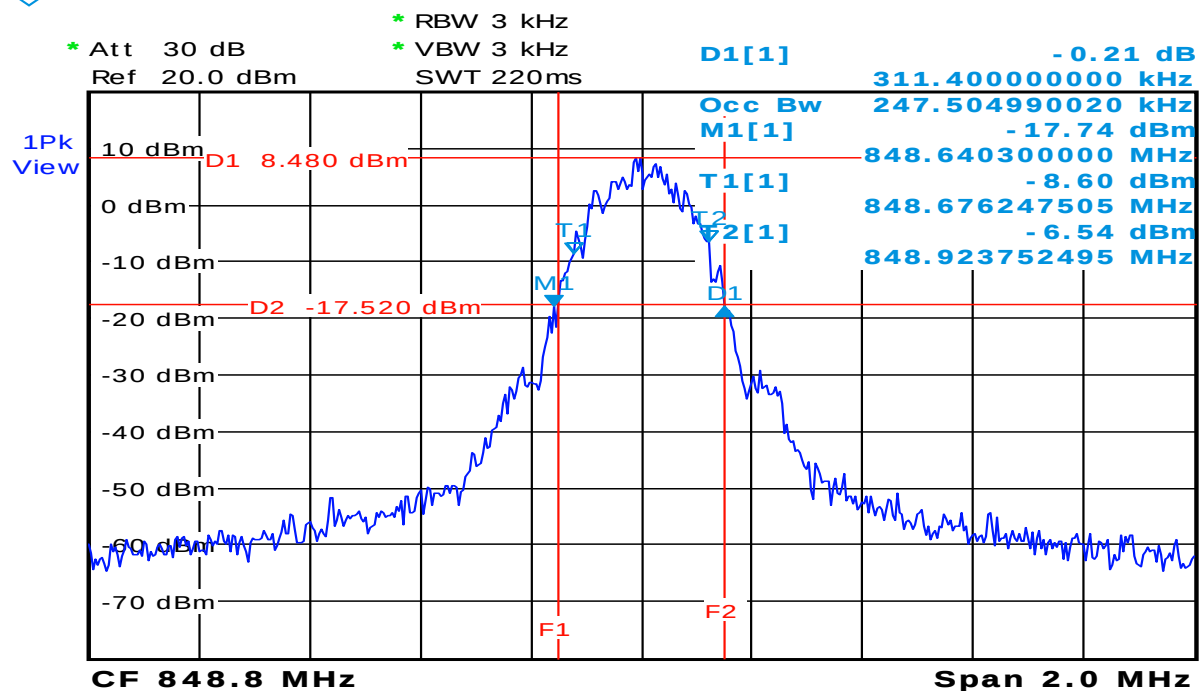


99% Occupied Bandwidth Configuration GPRS channel 190



Date: 23.JAN.2008 02:51:29

99% Occupied Bandwidth Configuration GPRS channel 251



Date: 23.JAN.2008 02:53:30

4.4 SPURIOUS EMISSIONS AT ANTENNA TERMINALS WEASUREMENT

4.4.1 LIMIT

In the FCC 22.917, on any frequency outside a licensee's frequency block within GSM spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB. The limit translates in the relevant power range (2 to 0.003W). At 2W(Power Control Level 5) the specified minimum attenuation becomes 43dB and the limit of emission equal to –13dBm

4.4.2 MEASURING INSTRUMENTS AND SETTING

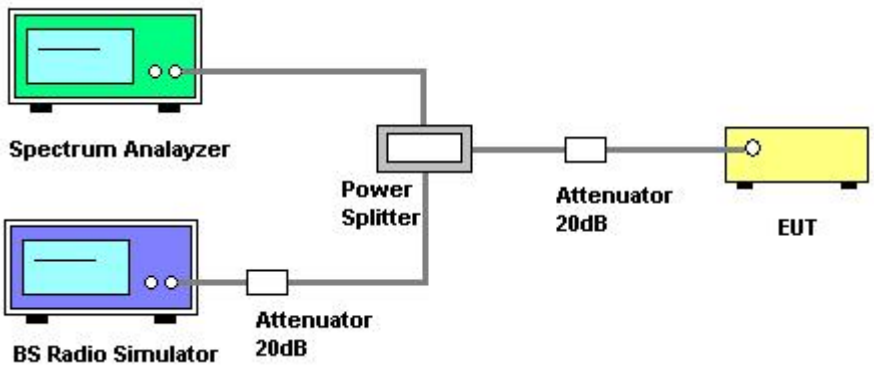
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Start Frequency	9kHz
Stop Frequency	10th carrier harmonic
RB / VB	1 MHz / 1MHz for Peak

4.4.3 TEST PROCEDURES

1. The EUT was set up for the maximum peak power with GPRS link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 128, 190 and 251(low, middle and high operational frequency range.)
2. 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 4dB in the transmitted path track.
3. 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/VB 1MHz.
4. When the spectrum scanned from 3GHz to 9GHz, it shall be connected to the high pass filter attenuated the carried frequency. The spectrum set RB/VB 1MHz.

4.4.4 TEST SETUP LAYOUT



4.4.5 TEST DEVIATION

There is no deviation with the original standard.

4.4.6 EUT OPERATION DURING TEST

The BS simulator was used to set the TX channel and power level and modulate the TX signal.

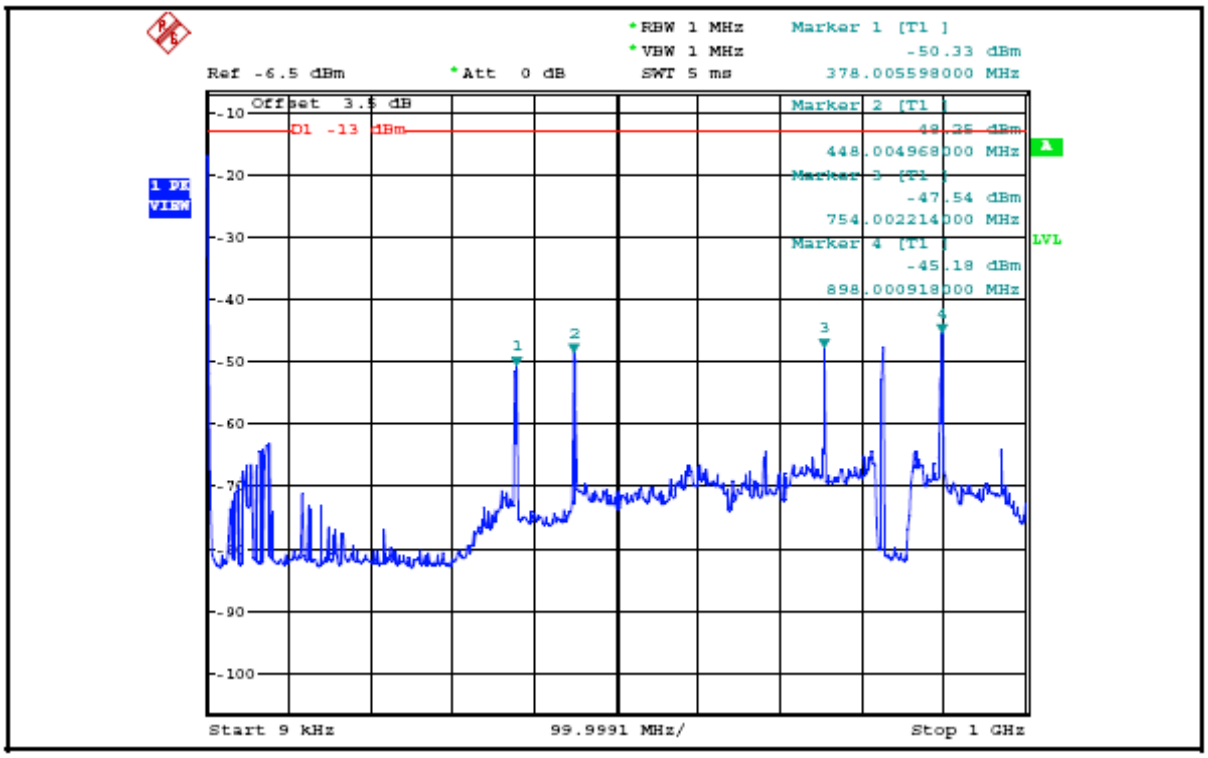
4.4.7 TEST RESULT OF SPURIOUS EMISSIONS AT ANTENNA TERMINALS

EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 128 (9KHz~10th Harmonic) for GPRS mode		

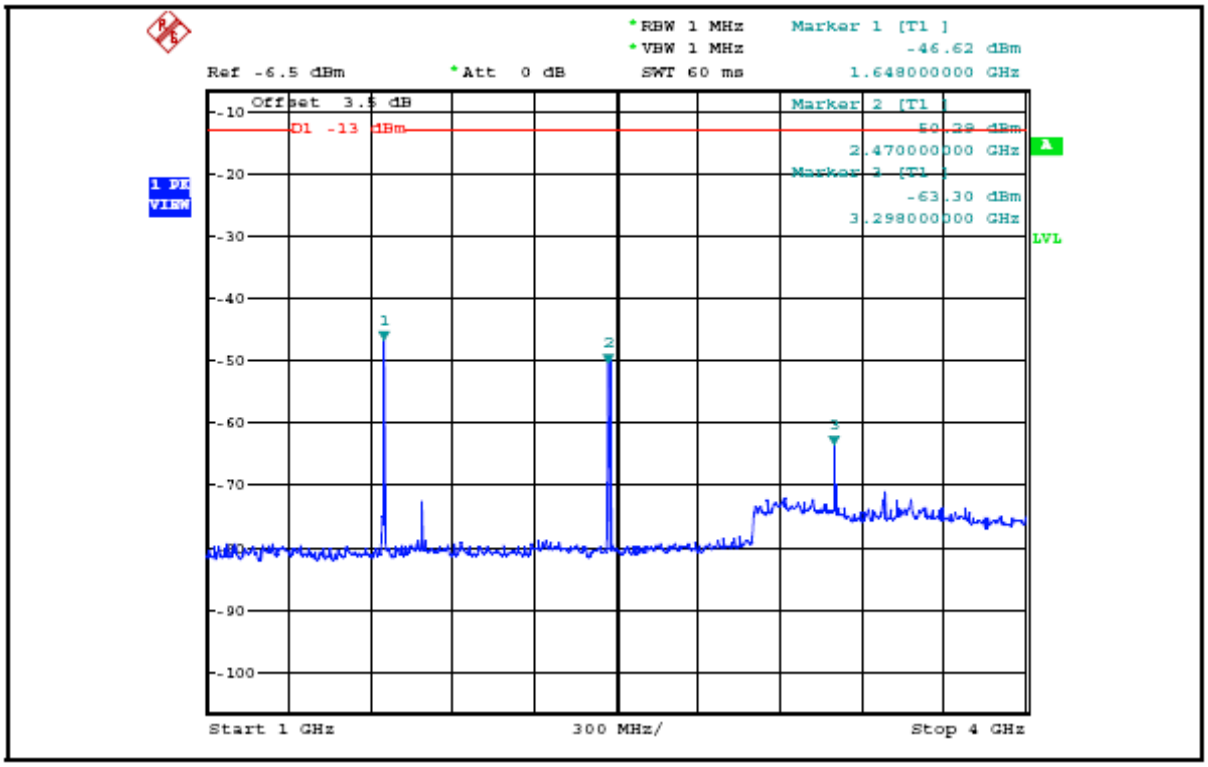
CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
378.00	-50.33	2.28	-48.05	-13.00	-35.05
448.00	-48.25	2.29	-45.96	-13.00	-32.96
754.00	-47.54	2.30	-45.24	-13.00	-32.24
898.00	-45.18	2.34	-42.84	-13.00	-29.84
1648.00	**-46.12**	**3.81**	**-42.81**	**-13.00**	**-29.81**
2476.00	-50.29	4.02	-46.27	-13.00	-33.27
3298.00	-63.30	4.18	-59.12	-13.00	-46.12
4120.00	-49.27	4.24	-45.03	-13.00	-32.03
4948.00	-69.42	4.29	-65.13	-13.00	-52.13
5770.00	-62.39	4.35	-58.04	-13.00	-45.04
6598.00	-69.94	4.40	-65.54	-13.00	-52.54
7420.00	-49.49	4.46	-45.03	-13.00	-32.03
8244.00	-60.51	4.49	-56.02	-13.00	-43.02

REMARKS:
1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

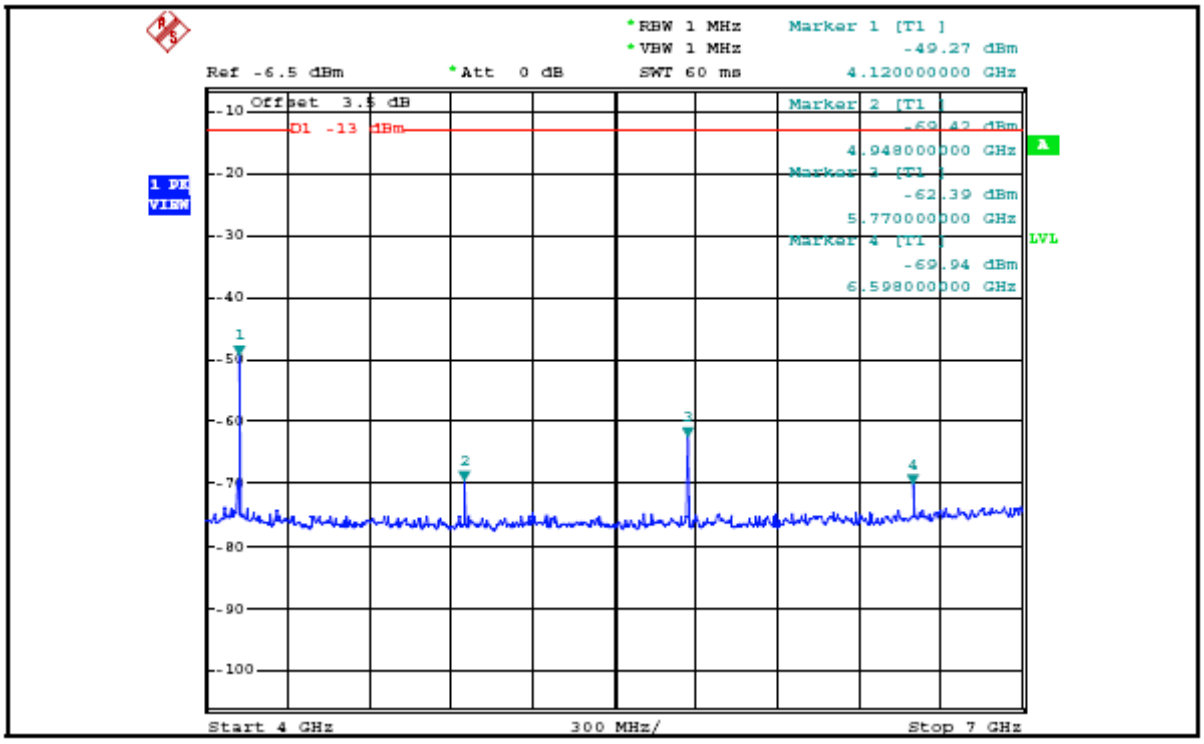
Conducted Spurious of Configuration GPRS channel 128 (9kHz~1GHz)



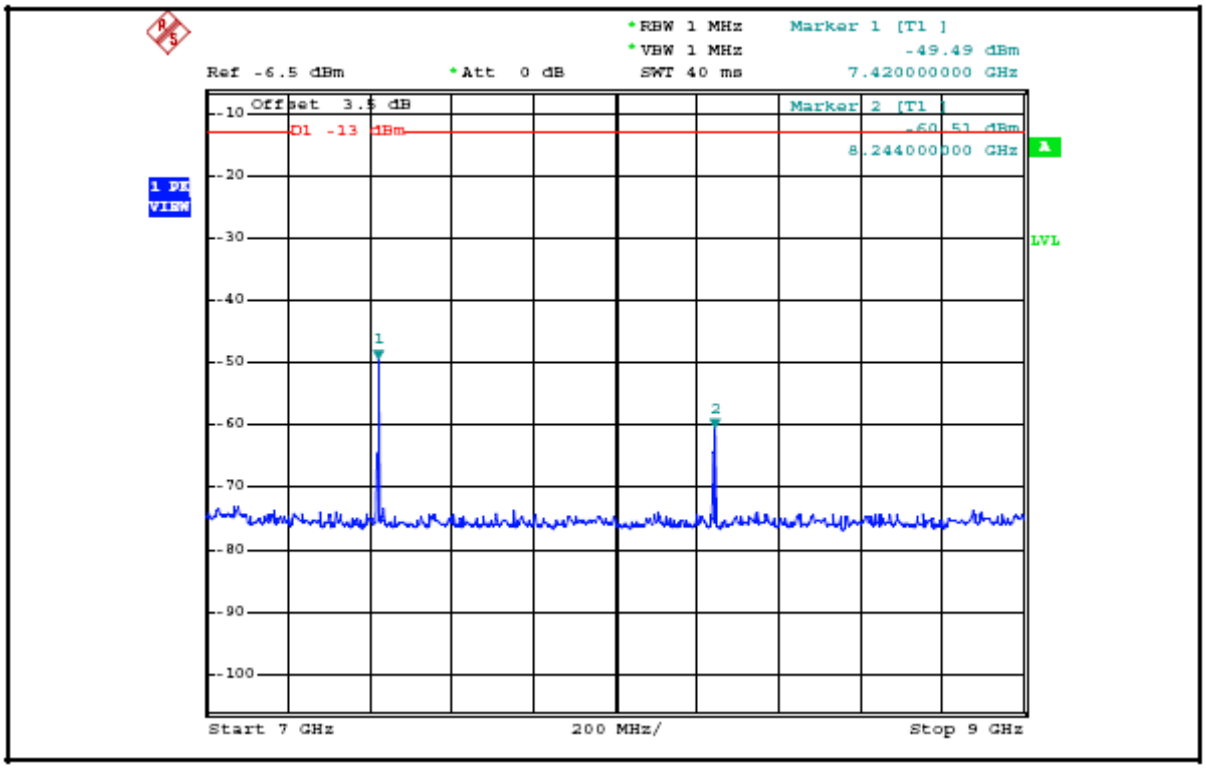
Conducted Spurious of Configuration GPRS channel 128 (1GHz~4GHz)



Conducted Spurious of Configuration GPRS channel 128 (4GHz~7GHz)



Conducted Spurious of Configuration GPRS channel 128 (7GHz~9GHz)

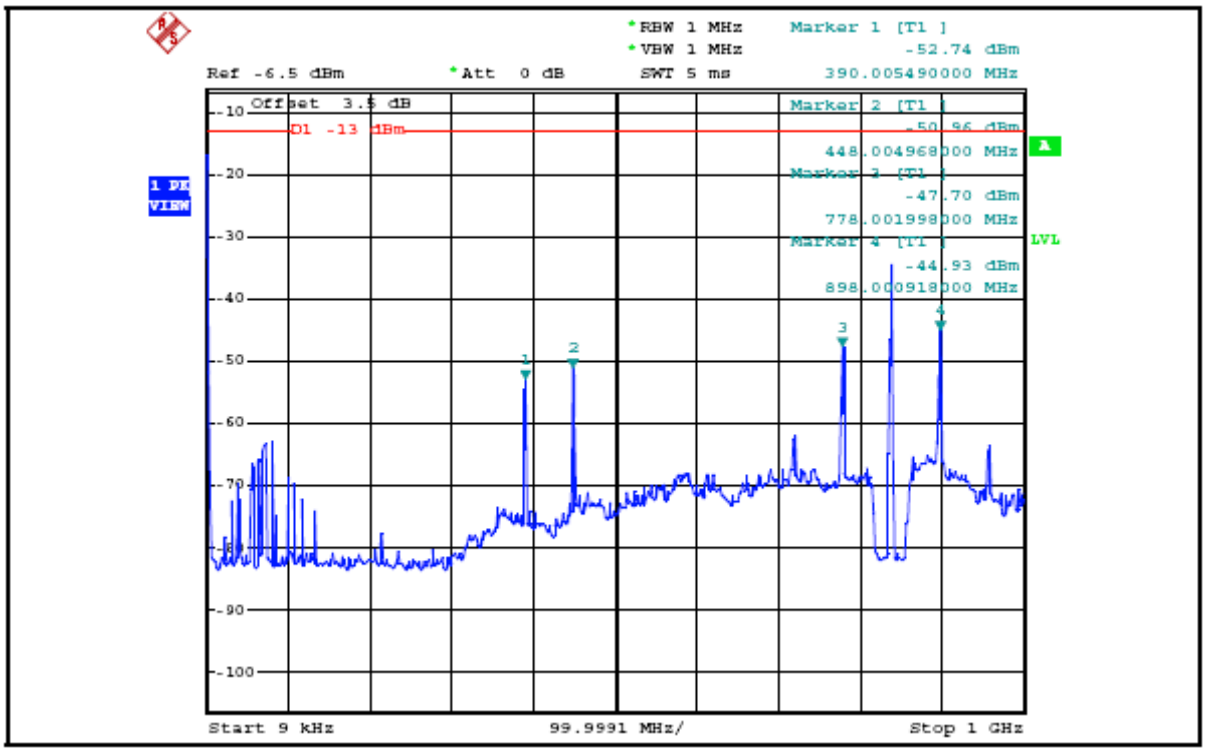


EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 190 (9KHz~10th Harmonic) for GPRS mode		

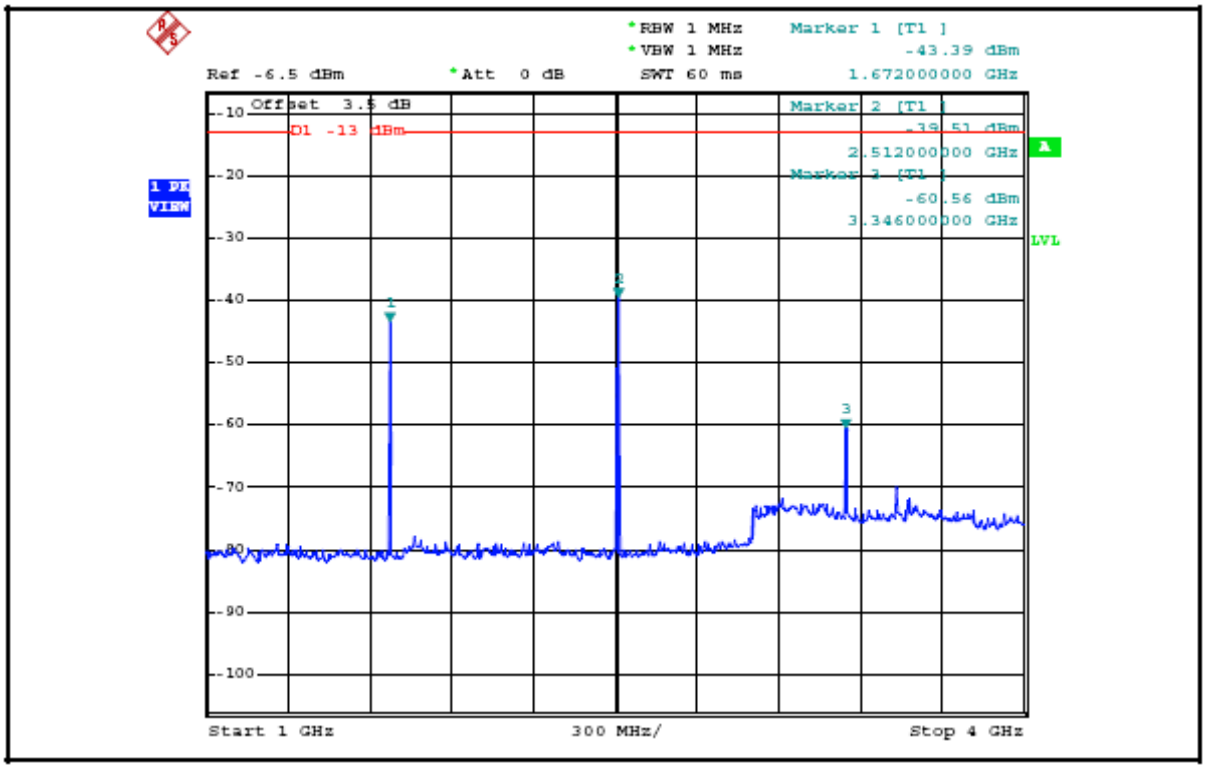
CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
390.00	-52.74	2.28	-50.46	-13.00	-35.05
448.00	-50.96	2.29	-48.67	-13.00	-35.67
778.00	-47.70	2.30	-45.39	-13.00	-32.39
898.00	-44.93	2.34	-42.59	-13.00	-29.59
1672.00	-42.39	3.81	-38.58	-13.00	-25.58
2512.00	**-39.51**	**4.02**	**-35.49**	**-13.00**	**-22.49**
3346.00	-60.56	4.18	-56.38	-13.00	-43.38
4180.00	-50.56	4.24	-46.32	-13.00	-33.32
5020.00	-70.11	4.30	-65.81	-13.00	-52.81
5860.00	-63.56	4.35	-59.21	-13.00	-46.21
6694.00	-64.42	4.40	-60.02	-13.00	-47.02
7528.00	-45.11	4.46	-40.65	-13.00	-27.65
8368.00	-57.09	4.50	-52.59	-13.00	-39.59

REMARKS:
1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

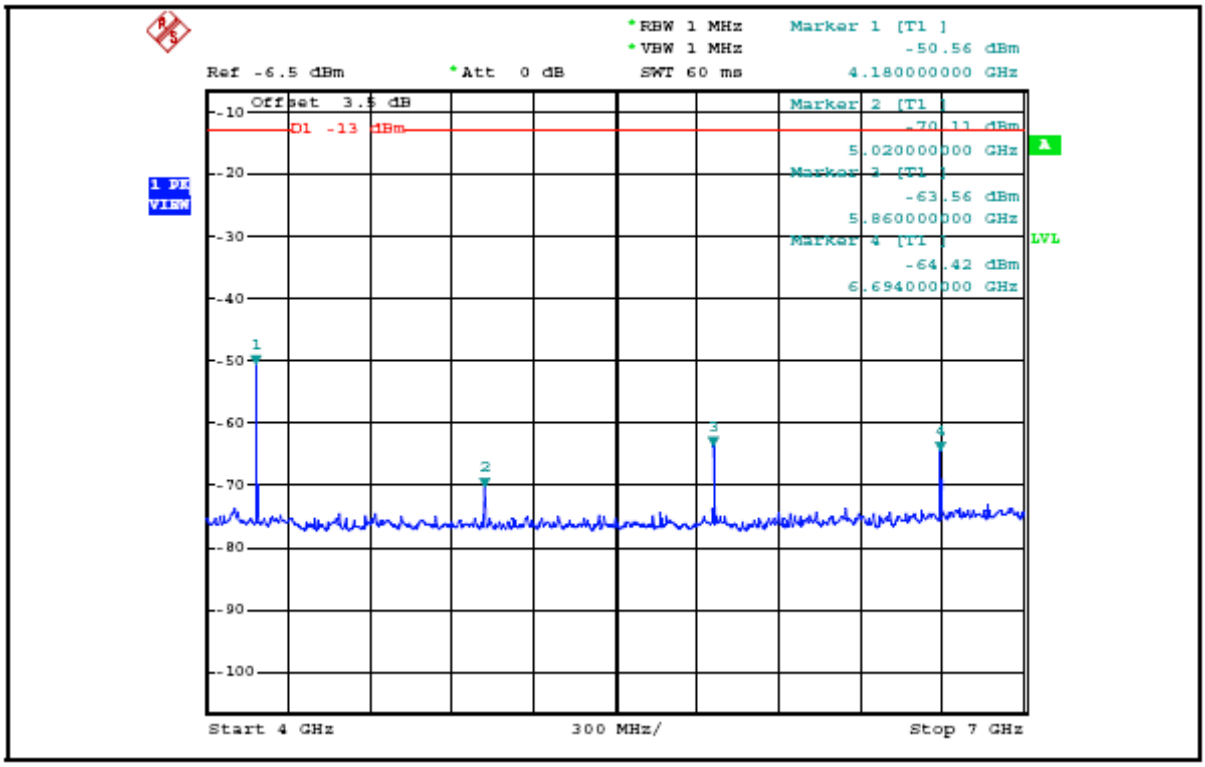
Conducted Spurious of Configuration GPRS channel 190 (9kHz~1GHz)



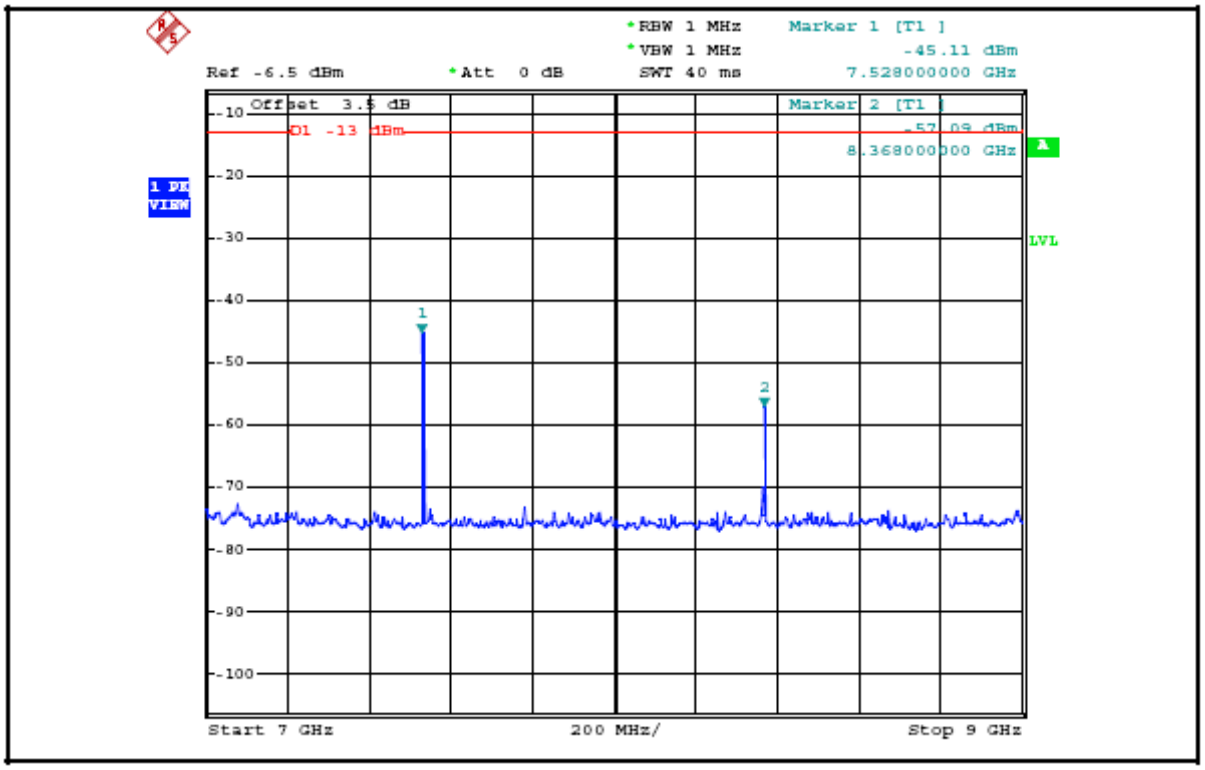
Conducted Spurious of Configuration GPRS channel 190 (1GHz~4GHz)



Conducted Spurious of Configuration GPRS channel 190 (4GHz~7GHz)



Conducted Spurious of Configuration GPRS channel 190 (7GHz~9GHz)



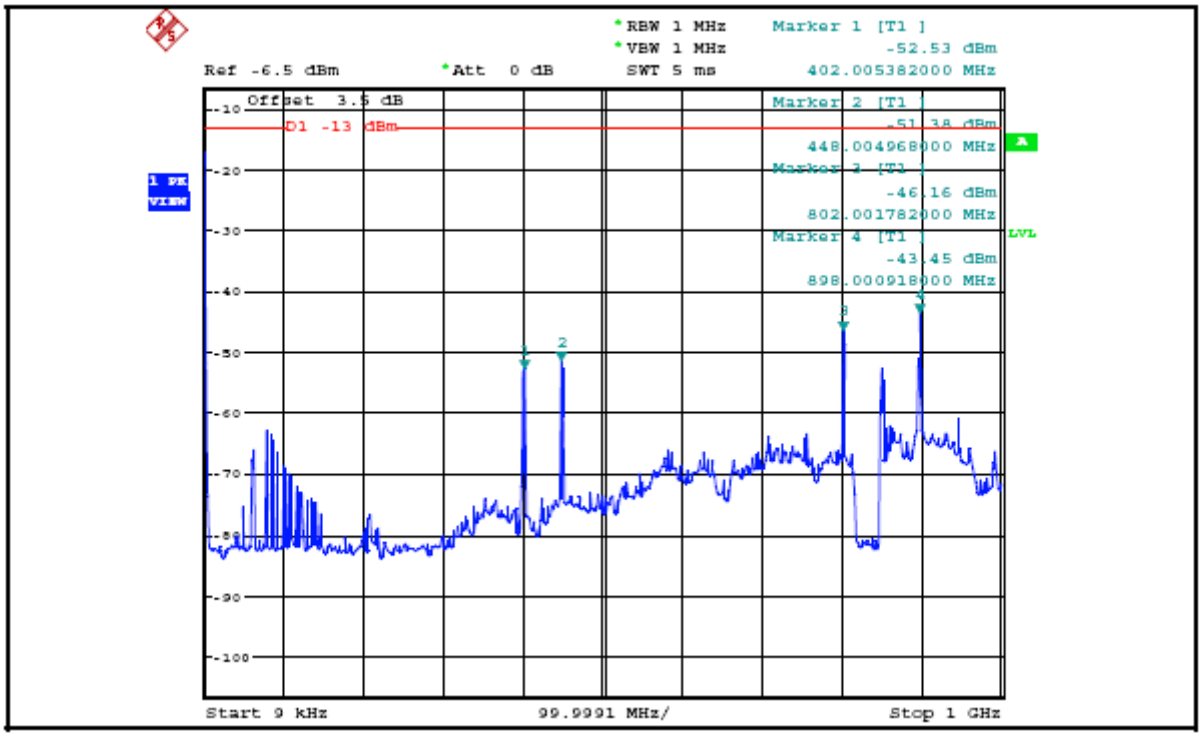
EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 251 (9KHz~10th Harmonic) for GPRS mode		

CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
402.00	-52.53	2.28	-50.25	-13.00	-37.25
448.00	-51.38	2.29	-49.09	-13.00	-36.09
802.00	-46.16	2.32	-43.84	-13.00	-30.84
898.00	**-43.45**	**2.34**	**-41.11**	**-13.00**	**-28.11**
1696.00	-45.58	3.81	-41.77	-13.00	-28.77
2548.00	-48.62	4.02	-44.60	-13.00	-31.60
3400.00	-60.26	4.19	-56.07	-13.00	-43.07
4240.00	-52.94	4.25	-48.69	-13.00	-35.69
5092.00	-71.04	4.30	-66.74	-13.00	-53.74
5944.00	-71.29	4.35	-66.94	-13.00	-53.94
6796.00	-68.30	4.40	-63.90	-13.00	-50.90
7640.00	-55.09	4.47	-50.62	-13.00	-37.62
8492.00	-49.63	4.50	-45.13	-13.00	-32.13

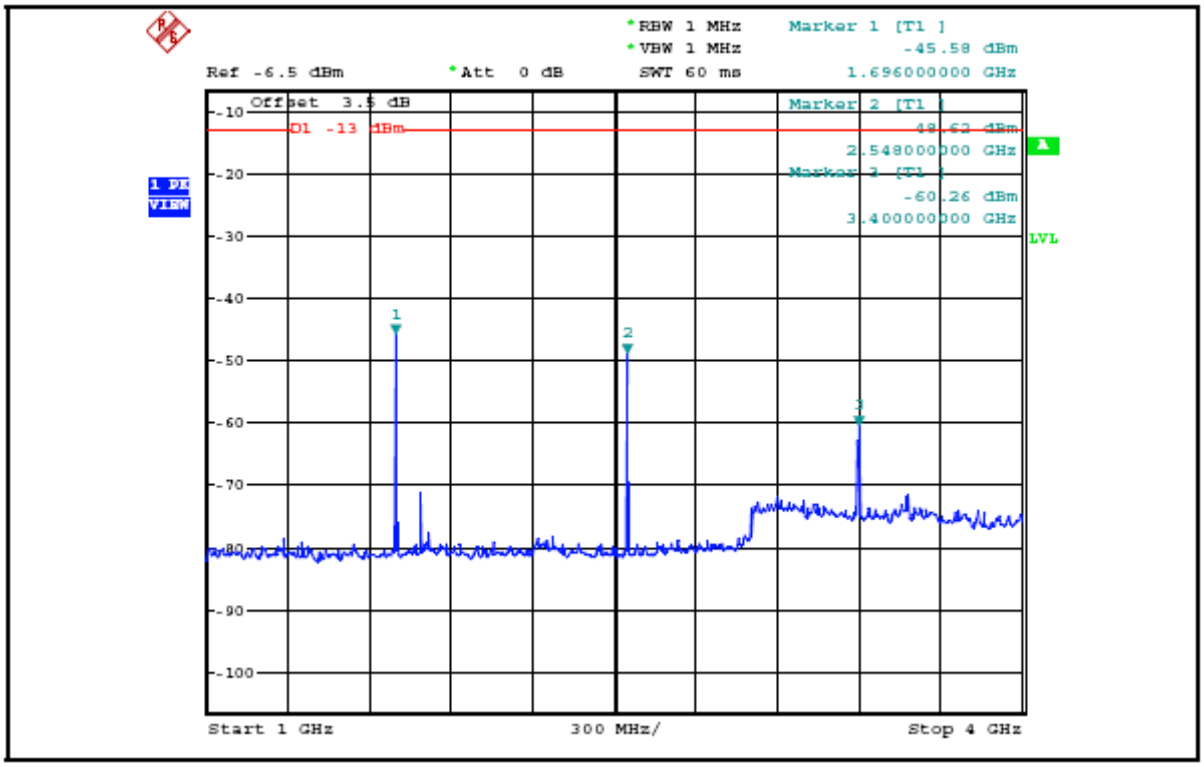
REMARKS:

1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

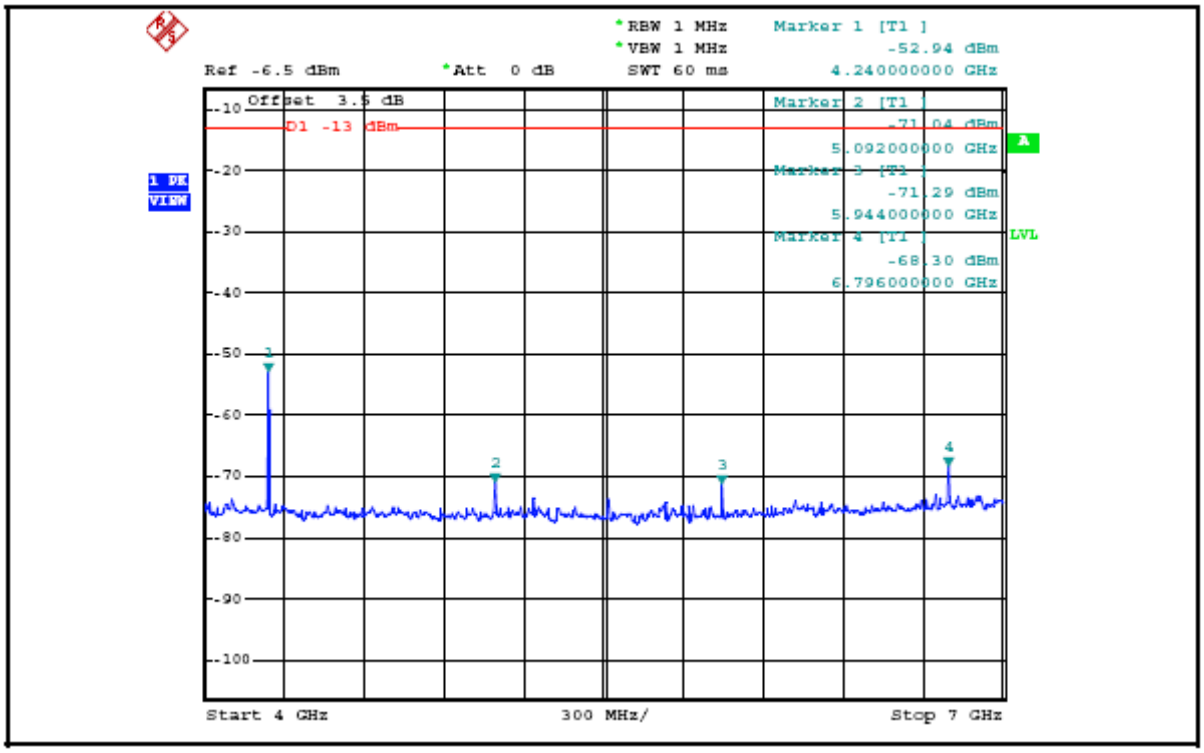
Conducted Spurious of Configuration GPRS channel 251 (9kHz~1GHz)



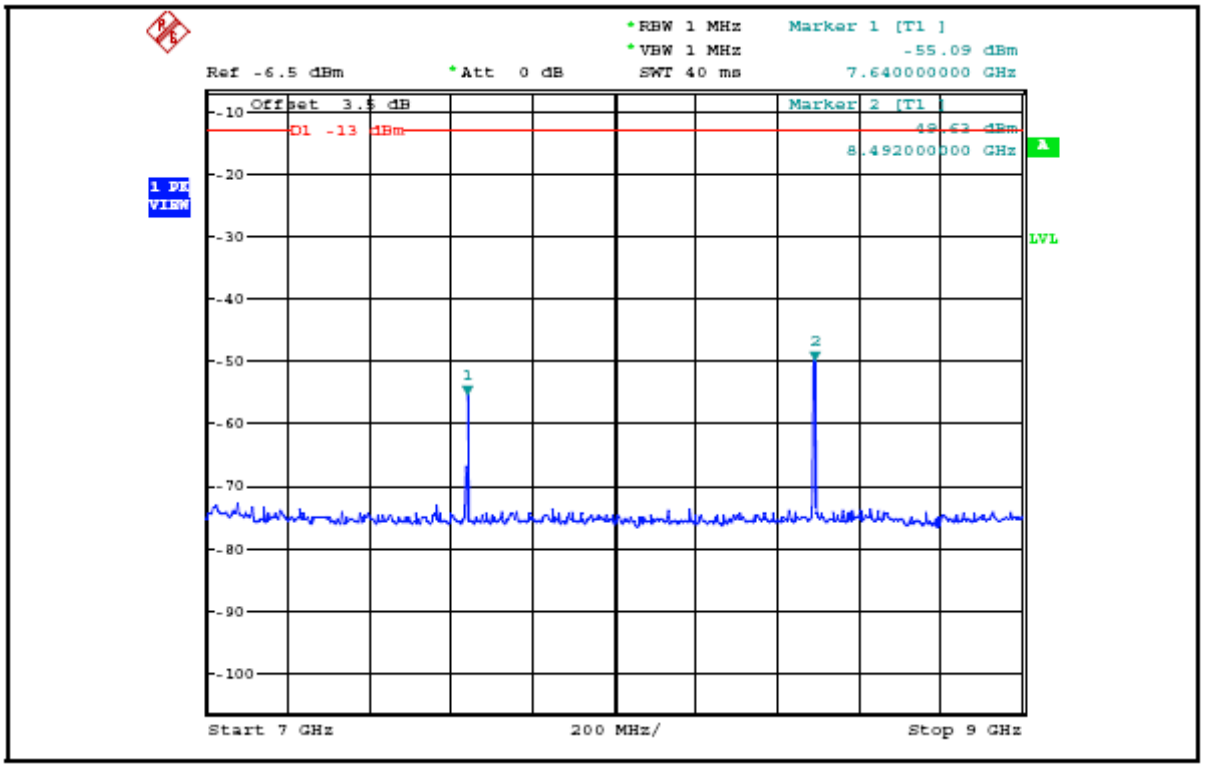
Conducted Spurious of Configuration GPRS channel 251 (1GHz~4GHz)



Conducted Spurious of Configuration GPRS channel 251 (4GHz~7GHz)



Conducted Spurious of Configuration GPRS channel 251 (7GHz~9GHz)

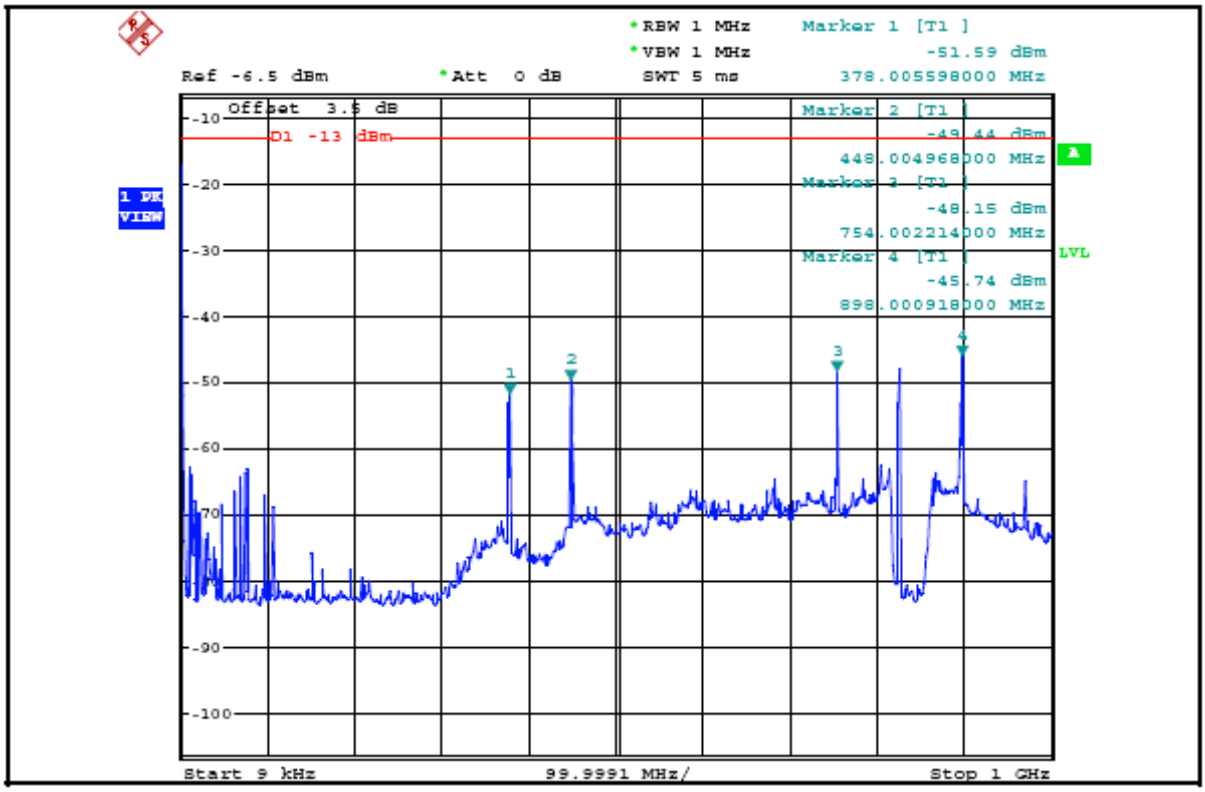


EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 128 (9KHz~10th Harmonic) for EDGE mode		

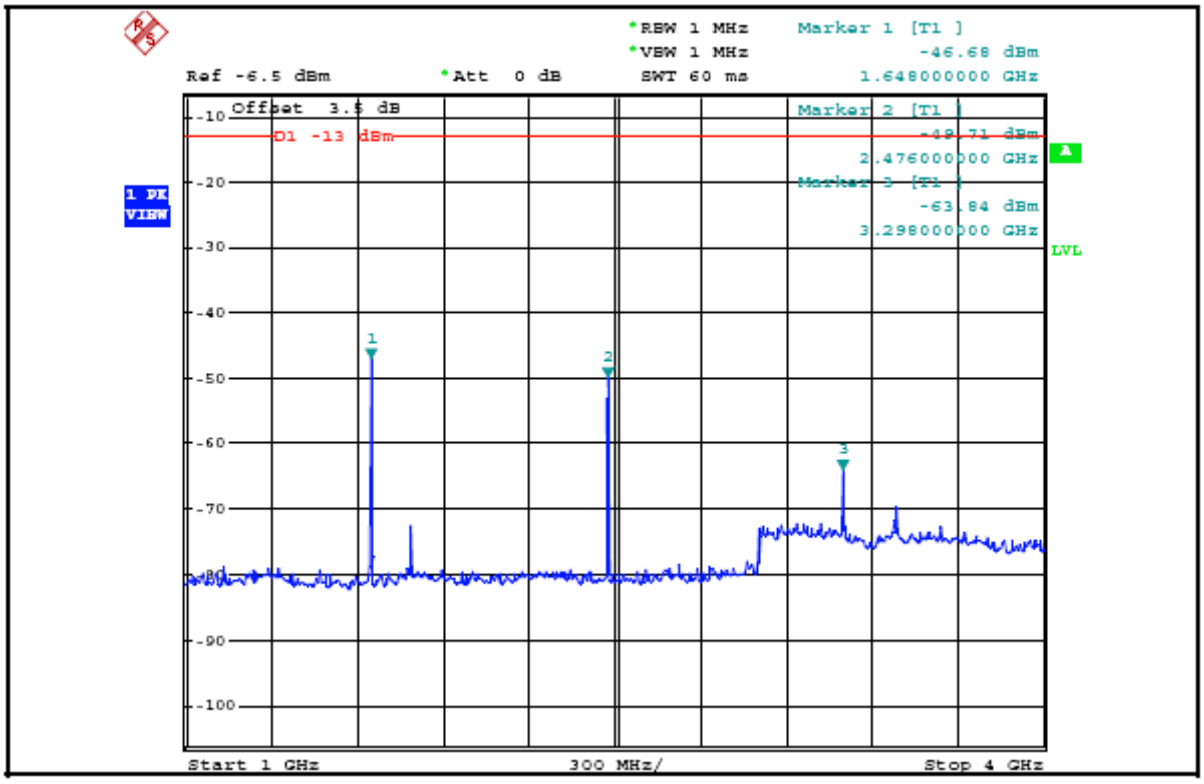
CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
378.00	-51.59	2.28	-49.31	-13.00	-36.31
448.00	-49.44	2.29	-47.15	-13.00	-34.15
754.00	-48.15	2.30	-45.85	-13.00	-32.85
898.00	-45.74	2.34	-43.40	-13.00	-30.40
1648.00	**-46.68**	**3.81**	**-42.87**	**-13.00**	**-29.87**
2476.00	-49.71	4.02	-45.69	-13.00	-32.69
3298.00	-63.84	4.18	-59.66	-13.00	-46.66
4120.00	-49.50	4.24	-45.26	-13.00	-32.26
4948.00	-69.29	4.29	-65.00	-13.00	-52.00
5770.00	-62.57	4.35	-58.22	-13.00	-45.22
6598.00	-70.24	4.40	-65.84	-13.00	-52.84
7420.00	-50.11	4.46	-45.65	-13.00	-32.65
8244.00	-61.28	4.49	-56.79	-13.00	-43.79

REMARKS:
1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

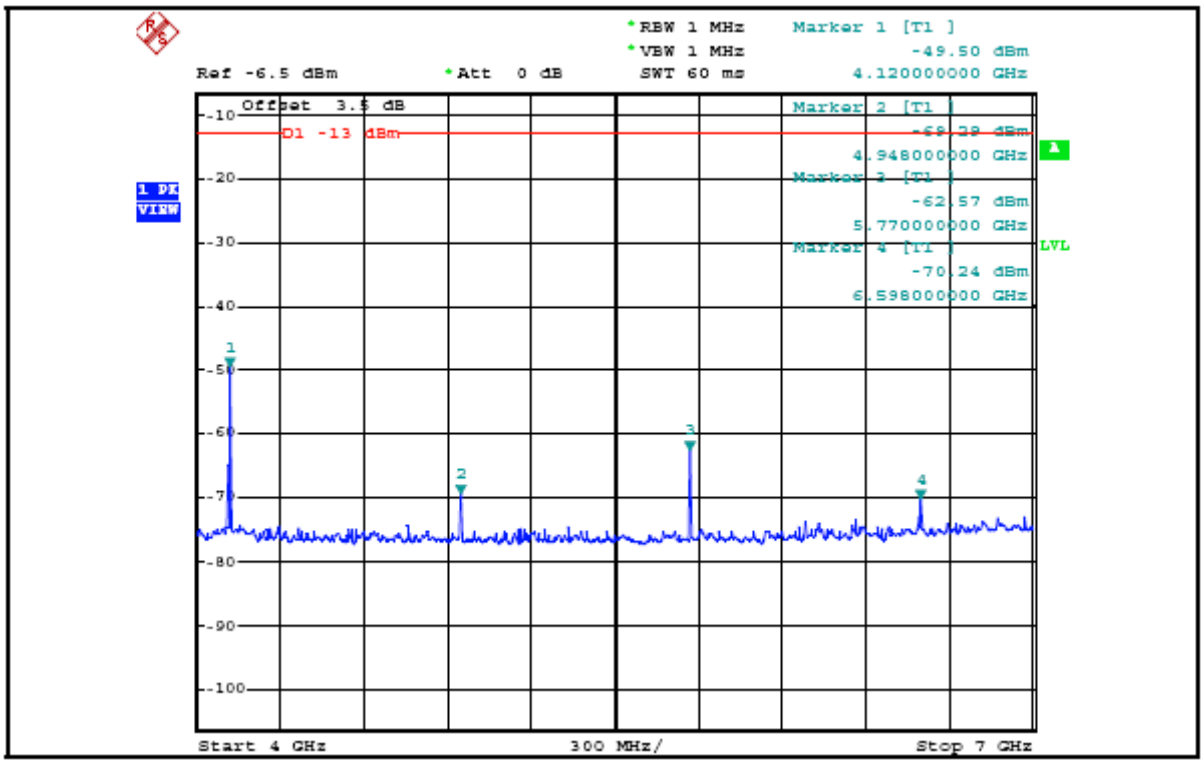
Conducted Spurious of Configuration EDGE channel 128 (9kHz~1GHz)



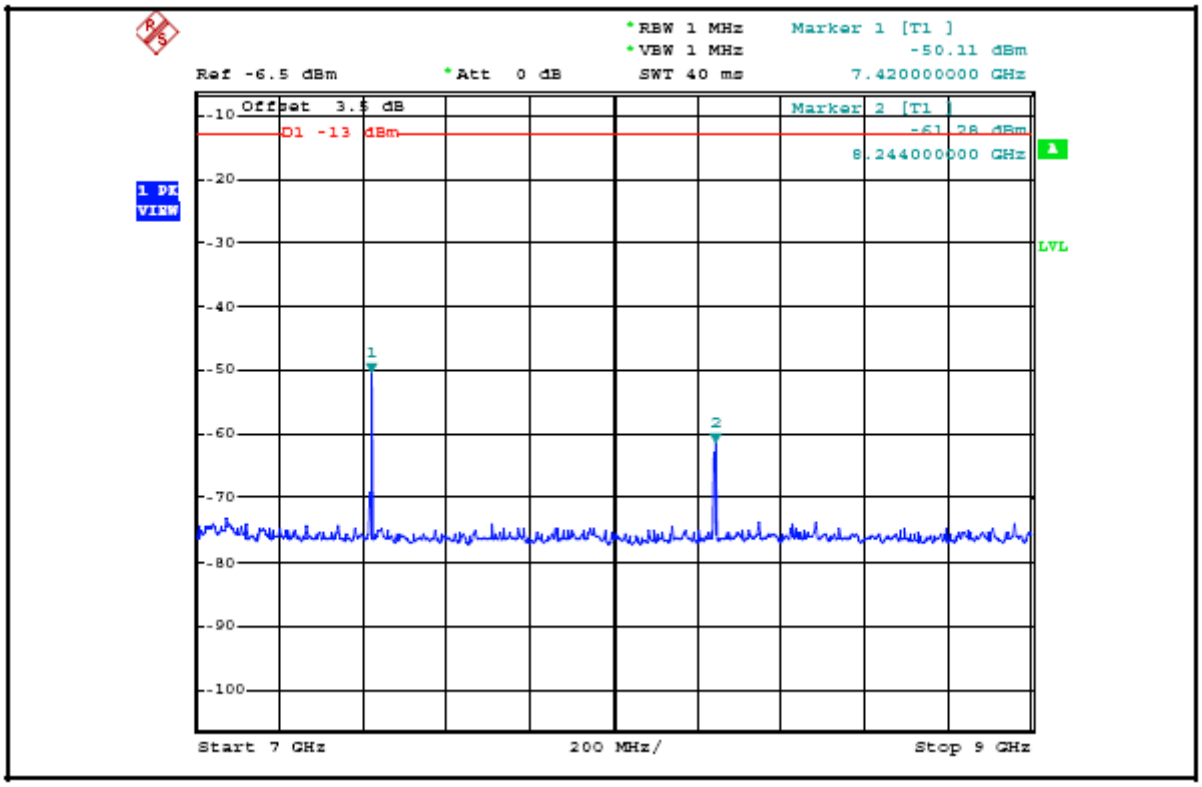
Conducted Spurious of Configuration EDGE channel 128 (1GHz~4GHz)



Conducted Spurious of Configuration EDGE channel 128 (4GHz~7GHz)



Conducted Spurious of Configuration EDGE channel 128 (7GHz~9GHz)

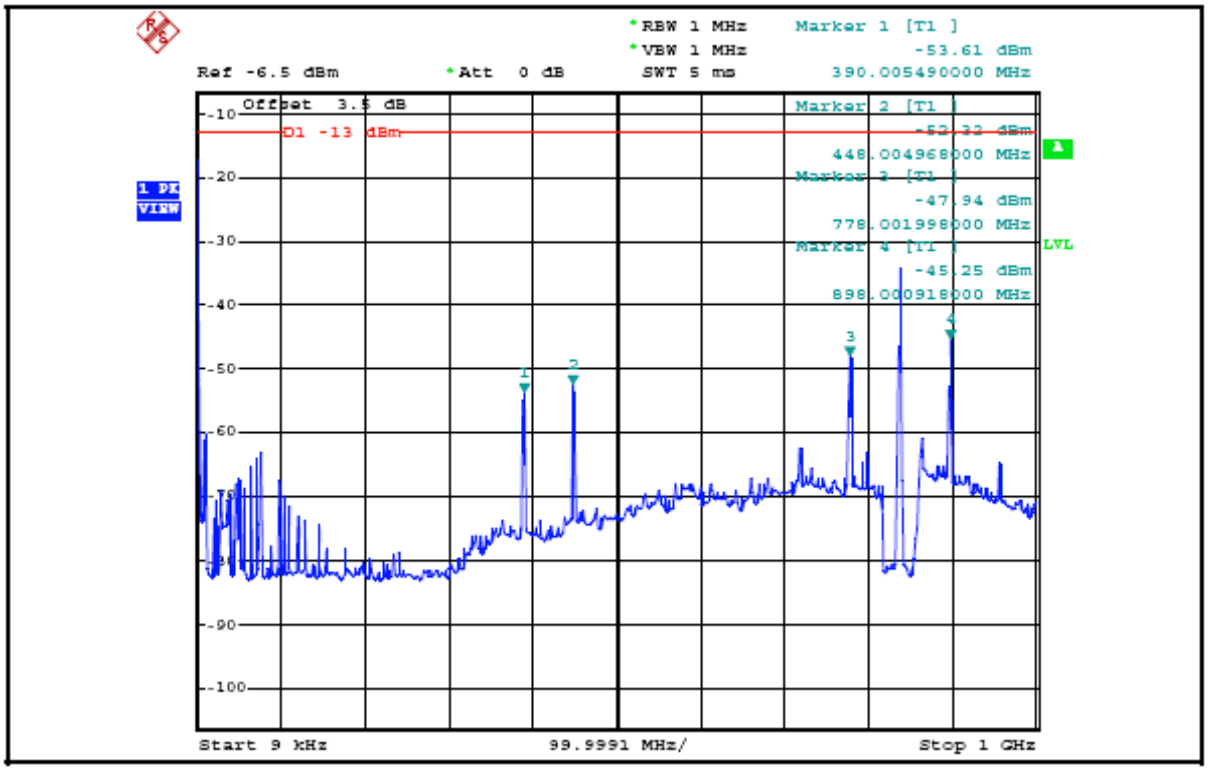


EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 190 (9KHz~10th Harmonic) for EDGE mode		

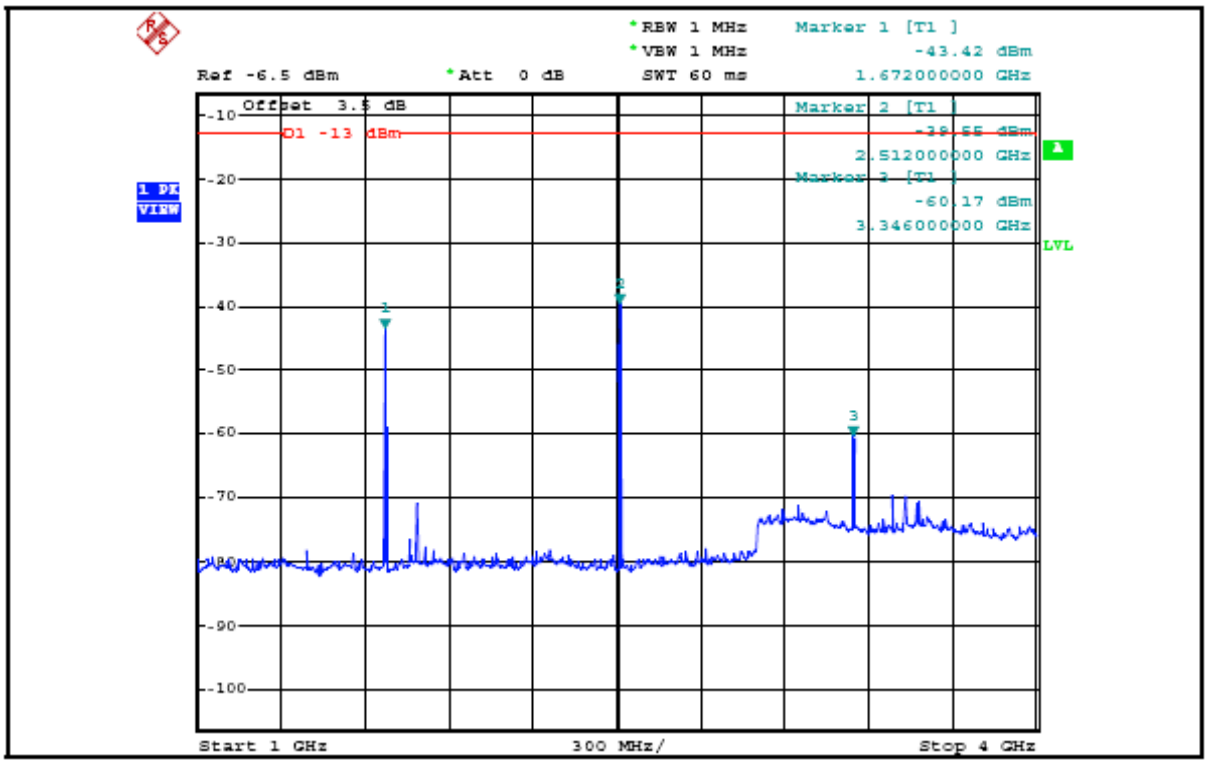
CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
390.00	-53.61	2.28	-51.33	-13.00	-38.33
448.00	-52.32	2.29	-50.03	-13.00	-37.03
778.00	-47.94	2.30	-45.63	-13.00	-32.63
898.00	-45.25	2.34	-42.91	-13.00	-29.91
1672.00	-43.42	3.81	-39.61	-13.00	-26.61
2512.00	**-39.55**	**4.02**	**-35.53**	**-13.00**	**-22.53**
3346.00	-60.17	4.18	-55.99	-13.00	-42.99
4180.00	-50.50	4.24	-46.26	-13.00	-33.26
5020.00	-72.47	4.30	-68.17	-13.00	-55.17
5860.00	-62.79	4.35	-58.44	-13.00	-45.44
6694.00	-64.87	4.40	-60.47	-13.00	-47.47
7528.00	-46.19	4.46	-41.73	-13.00	-28.73
8368.00	-57.42	4.50	-52.92	-13.00	-39.92

REMARKS:
1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

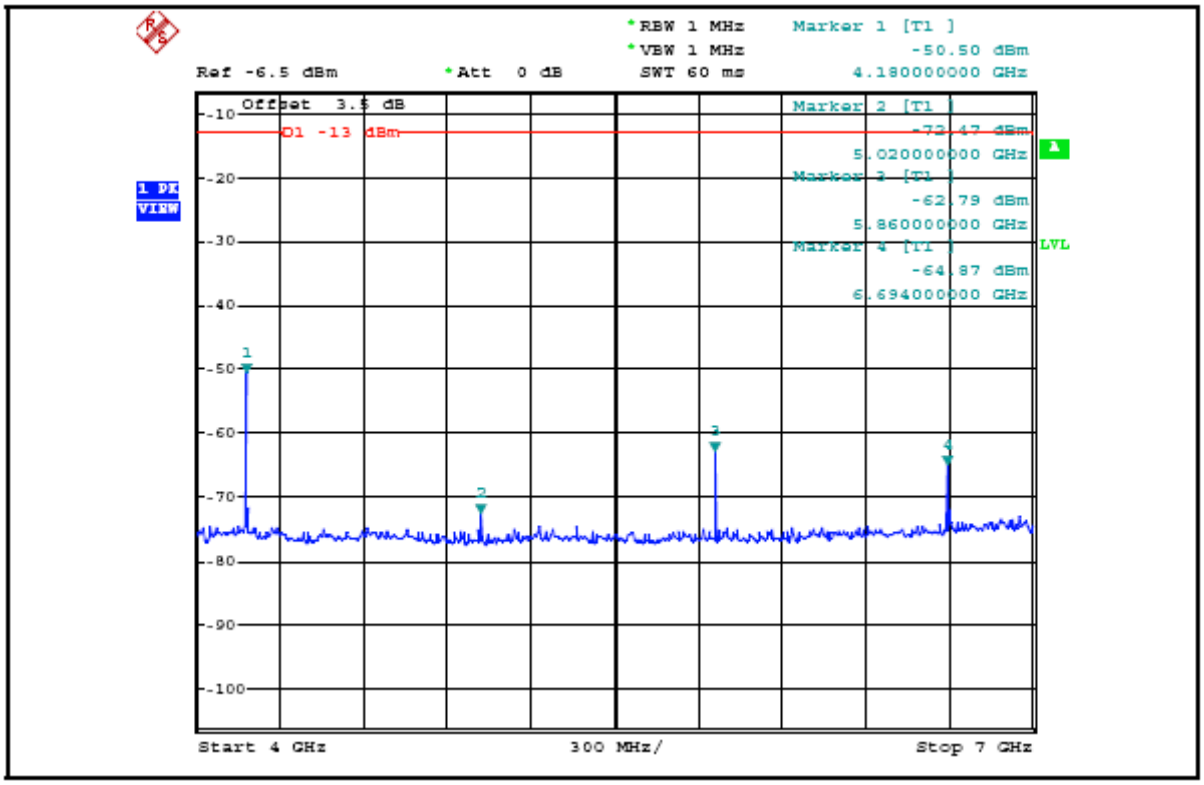
Conducted Spurious of Configuration EDGE channel 190 (9kHz~1GHz)



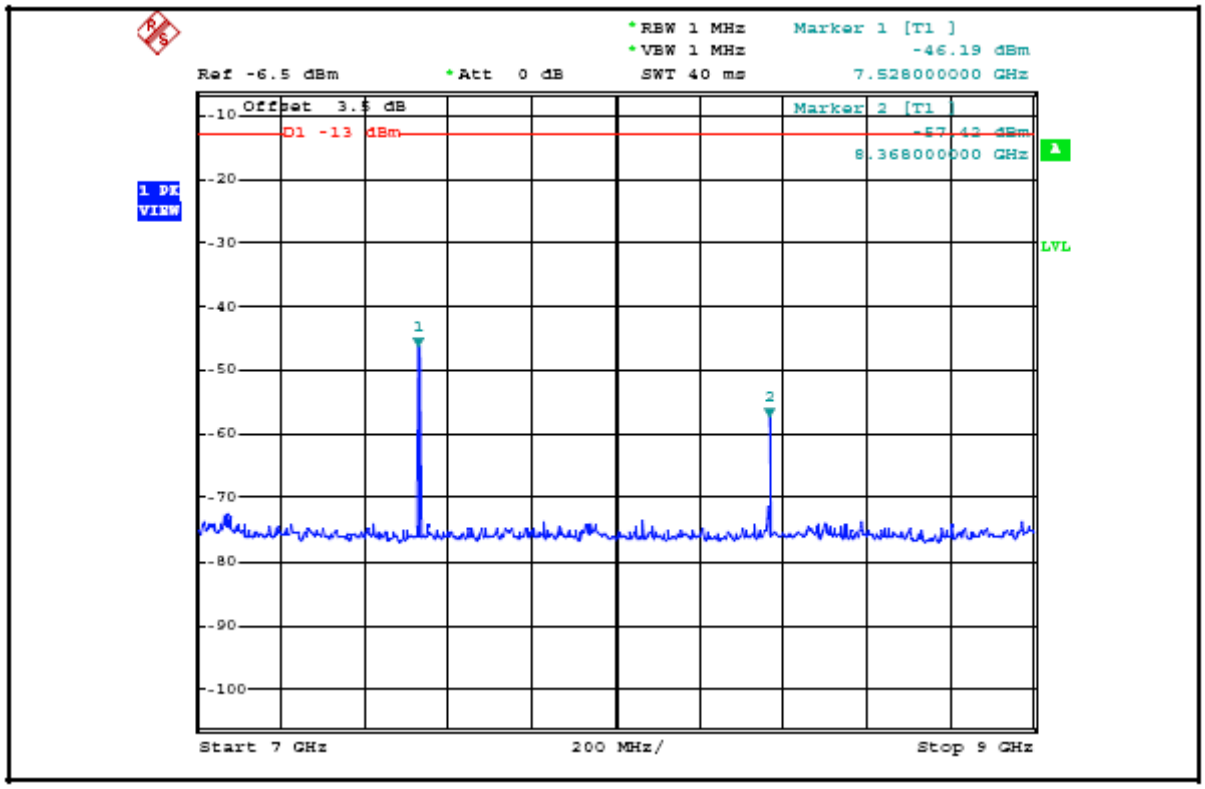
Conducted Spurious of Configuration EDGE channel 190 (1GHz~4GHz)



Conducted Spurious of Configuration EDGE channel 190 (4GHz~7GHz)



Conducted Spurious of Configuration EDGE channel 190 (7GHz~9GHz)

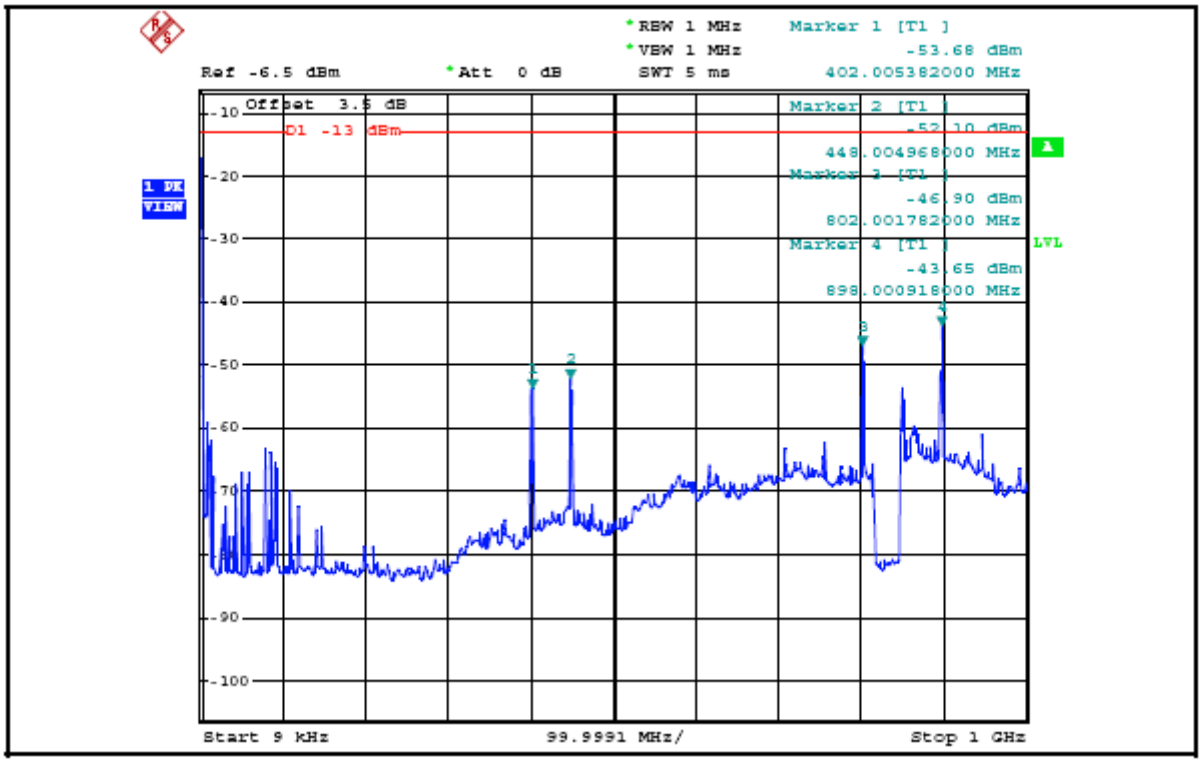


EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 251 (9KHz~10th Harmonic) for EDGE mode		

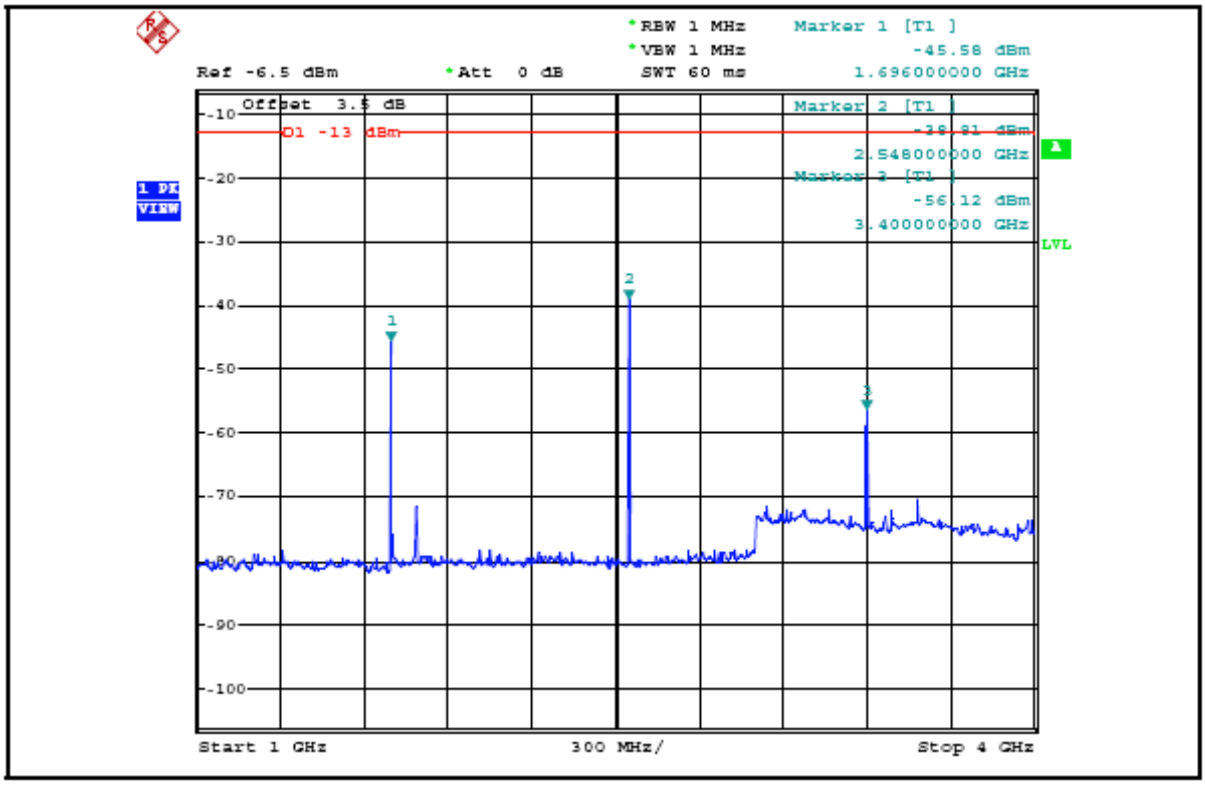
CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
402.00	-53.68	2.28	-51.40	-13.00	-38.40
448.00	-52.10	2.29	-49.81	-13.00	-36.81
802.00	-46.90	2.32	-44.58	-13.00	-31.58
898.00	-43.65	2.34	-41.31	-13.00	-28.31
1696.00	-45.58	3.81	-41.77	-13.00	-28.77
2548.00	**-38.81**	**4.02**	**-34.79**	**-13.00**	**-21.79**
3400.00	-56.12	4.19	-51.93	-13.00	-38.93
4240.00	-53.03	4.25	-48.78	-13.00	-35.78
5092.00	-71.21	4.30	-66.91	-13.00	-53.91
5944.00	-71.33	4.35	-66.98	-13.00	-53.98
6796.00	-68.90	4.40	-64.50	-13.00	-51.50
7640.00	-57.91	4.47	-53.44	-13.00	-40.44
8492.00	-51.02	4.50	-46.52	-13.00	-33.52

REMARKS:
1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

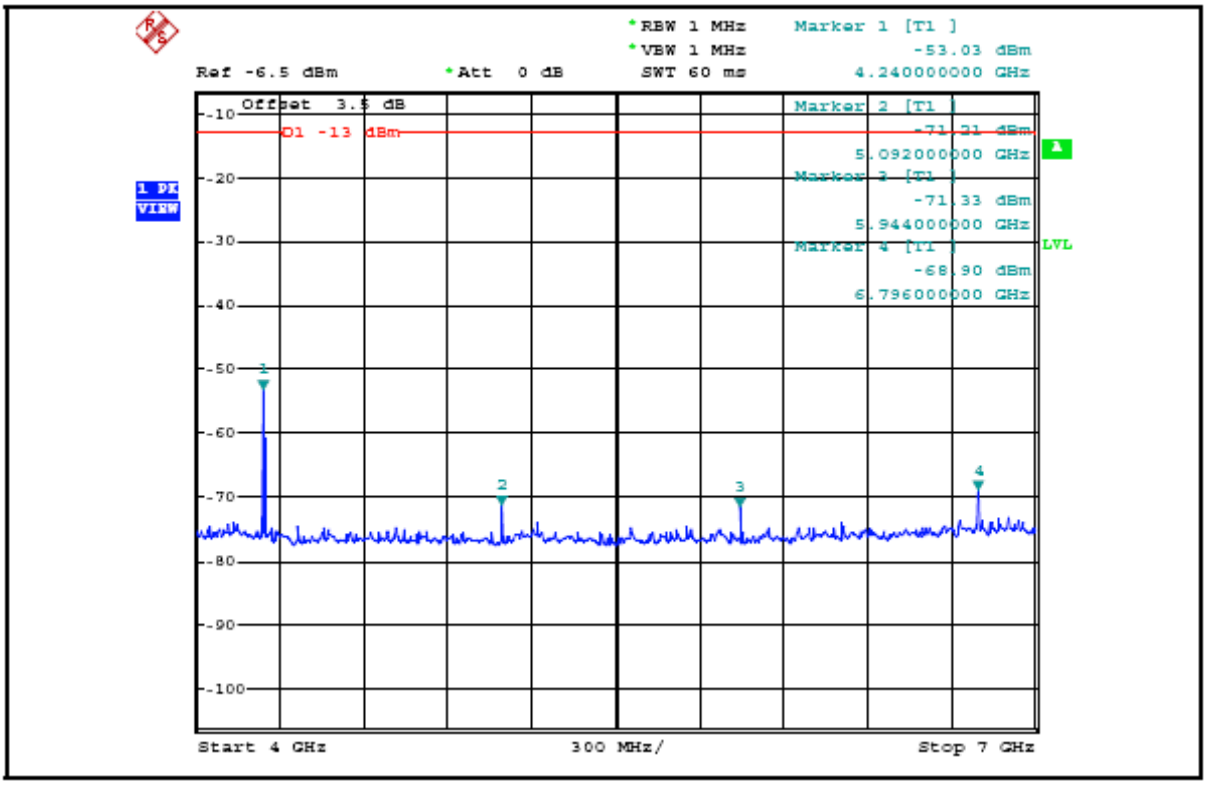
Conducted Spurious of Configuration EDGE channel 251 (9kHz~1GHz)



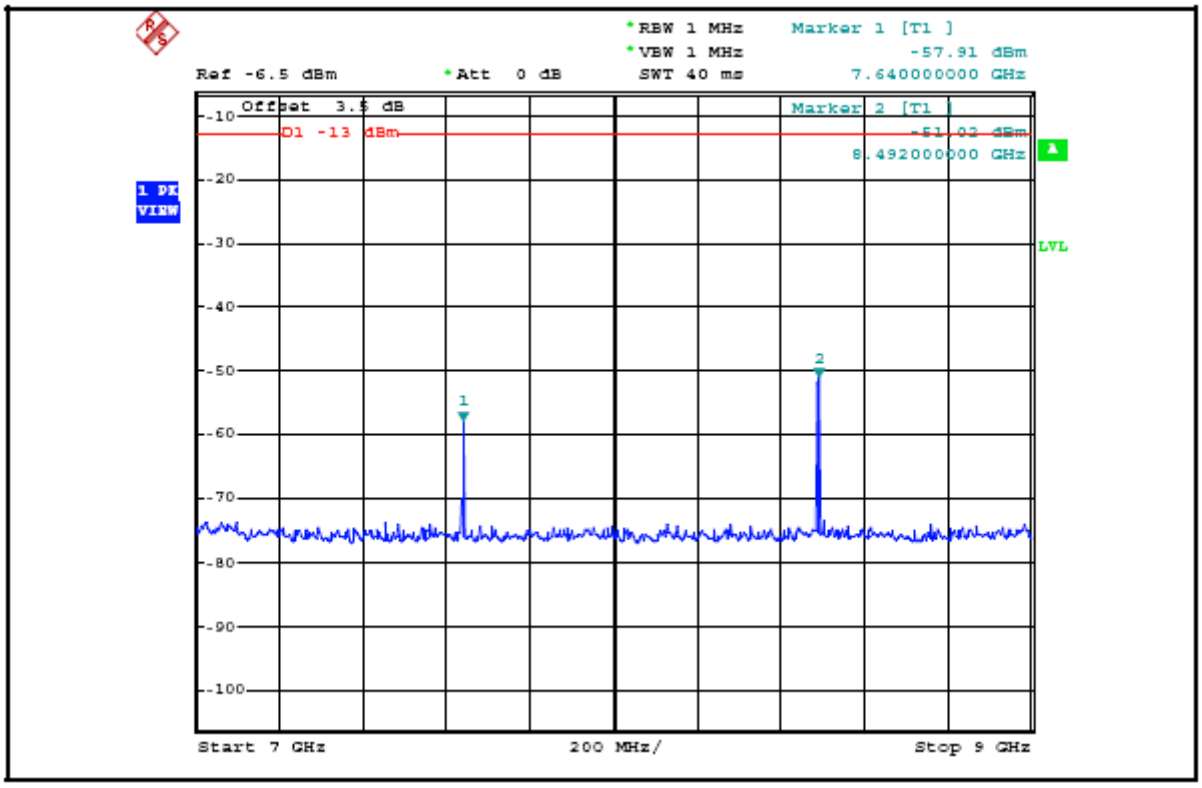
Conducted Spurious of Configuration EDGE channel 251 (1GHz~4GHz)



Conducted Spurious of Configuration EDGE channel 251 (4GHz~7GHz)



Conducted Spurious of Configuration EDGE channel 251 (7GHz~9GHz)



4.5 SPURIOUS RADIATED EMISSIONS MEASUREMENT

4.5.1 LIMIT

Out of band emissions, The power of any emissions 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 the frequency block. The spurious emissions of limit equal to –13dBm.

4.5.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Start Frequency	30 MHz
Stop Frequency	10th carrier harmonic
Detector	Positive Peak
Span	100 MHz
Sweep Time	1s
RB / VB	1 MHz / 1MHz
Attenuation	Positive Peak

4.5.3 TEST PROCEDURES

1. The EUT was placed on the top of the turntable in fully anechoic chamber.
2. The test shall be made in the transmitting mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. This measurement shall be repeated with the transmitter in standby mode where applicable.
4. For 30~1000MHz spurious emissions measurement, the broad band bi-log receiving antenna was placed 3 meters far away from the turntable. For 1~10th carrier harmonic measurement, the receiving Horn antenna was placed 1.5 meters far away from the turntable.
5. The broadband receiving antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Each recorded suspected value is indicated as Read Level (Raw).
6. Replace the EUT by standard antenna and feed the RF port by signal generator.
7. Adjust the frequency of the signal generator to the suspected emission and slightly rotate the turntable to locate the position with maximum reading.
8. Adjust the power level of the signal generator to reach the same reading with Read Level (Raw).
9. The level of the spurious emission is the power level of (8) plus the gain of the standard antenna in dBi and minus the loss of the cable used between the signal generator and the standard antenna.

4.5.4 TEST SETUP LAYOUT

This test setup layout is the same as that shown in section 4.2.4.

4.5.5 TEST DEVIATION

There is no deviation with the original standard.

4.5.6 EUT OPERATION DURING TEST

The BS simulator was used to set the TX channel and power level and modulate the TX signal.

4.5.7 RESULTS OF TRANSMITTER SPURIOUS EMISSIONS BELOW 1GHZ

EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH128 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS) (dBm)	Limits (dBm)	Margins	Note
567.3800	V	Z	TX	-52.19	-13.0	-39.19	
586.7800	V	Z	TX	-51.29	-13.0	-38.29	
625.5800	V	Z	TX	-50.58	-13.0	-37.58	
664.3800	V	Z	TX	-48.54	-13.0	-35.54	
716.7600	V	Z	TX	-46.75	-13.0	-33.75	
790.4800	V	Z	TX	-46.62	-13.0	-33.62	

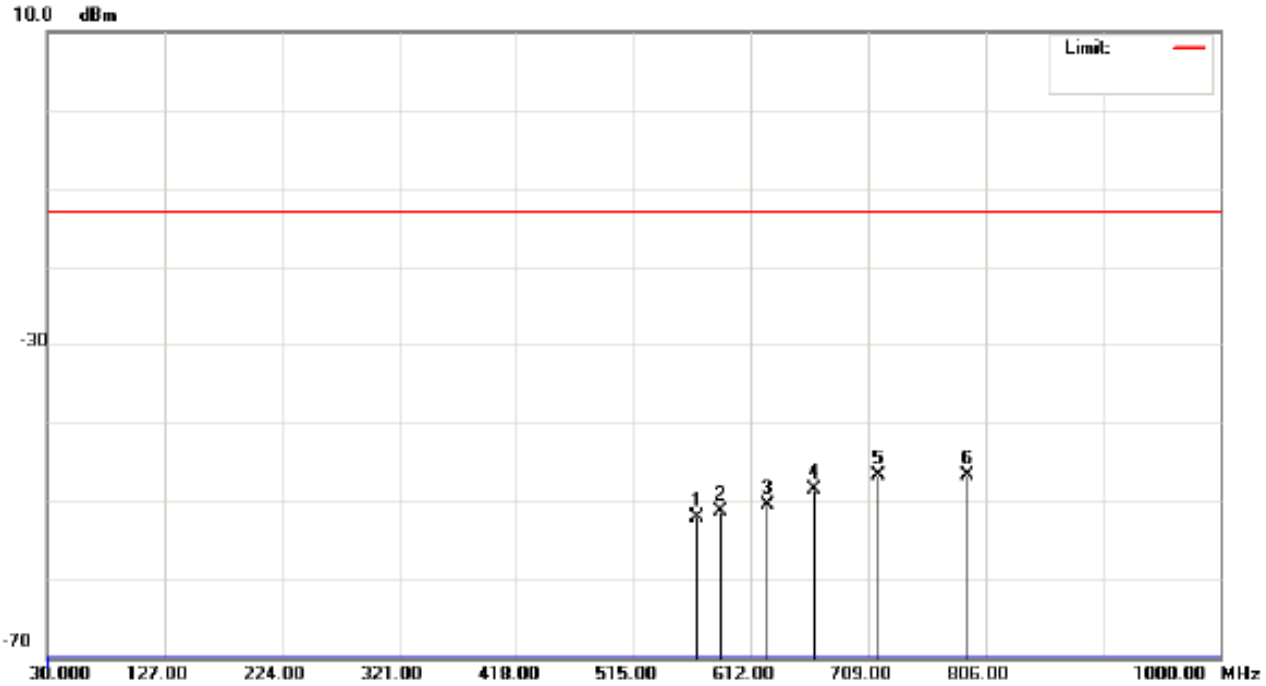
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH128 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS)	Limits	Margins	Note
571.2600	H	Z	TX	-52.53	-13.0	-39.53	
602.3000	H	Z	TX	-51.21	-13.0	-38.21	
644.9800	H	Z	TX	-50.14	-13.0	-37.14	
689.6000	H	Z	TX	-48.54	-13.0	-35.54	
726.4600	H	Z	TX	-47.85	-13.0	-34.85	
761.3800	H	Z	TX	-45.87	-13.0	-32.87	

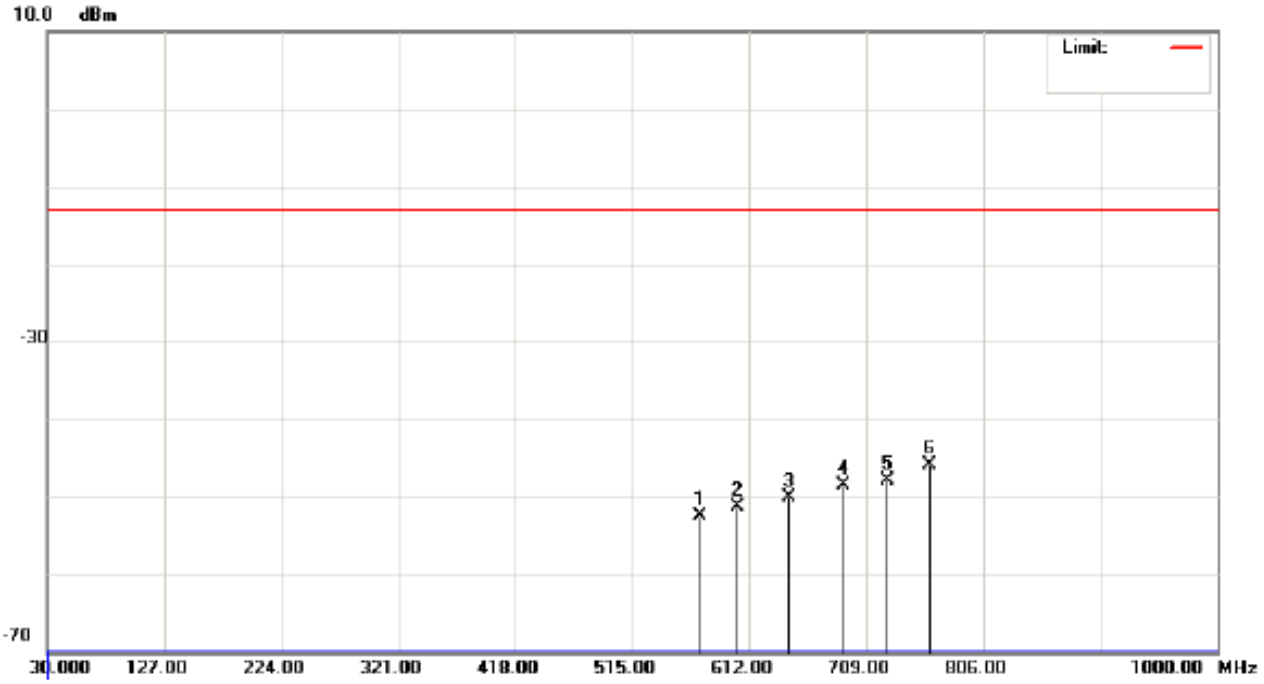
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



4.5.8 RESULTS OF TRANSMITTER SPURIOUS EMISSIONS ABOVE 1GHZ

EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH128 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS) (dBm)	Limits (dBm)	Margins	Note
1648.520	V	Z	TX	-31.69	-13.0	-18.69	
2472.740	V	Z	TX	-24.09	-13.0	-11.09	
3297.020	V	Z	TX	-38.62	-13.0	-25.62	
4120.840	V	Z	TX	-45.80	-13.0	-32.80	
4945.760	V	Z	TX	-49.25	-13.0	-36.25	

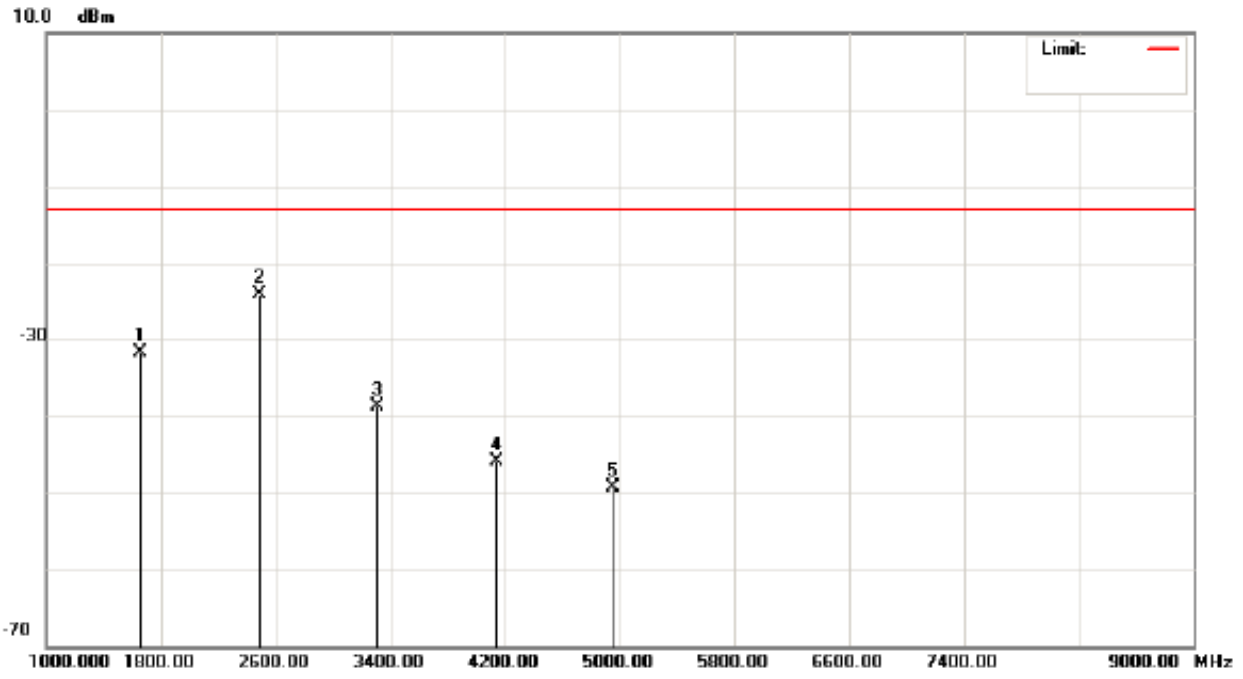
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 1GHz to 9GHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH128 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS)	Limits	Margins	Note
1648.440	H	Z	TX	-33.68	-13.0	-20.68	
2472.680	H	Z	TX	-30.51	-13.0	-17.51	
3296.760	H	Z	TX	-38.70	-13.0	-25.70	
4120.760	H	Z	TX	-43.38	-13.0	-30.38	
4944.880	H	Z	TX	-52.44	-13.0	-39.44	

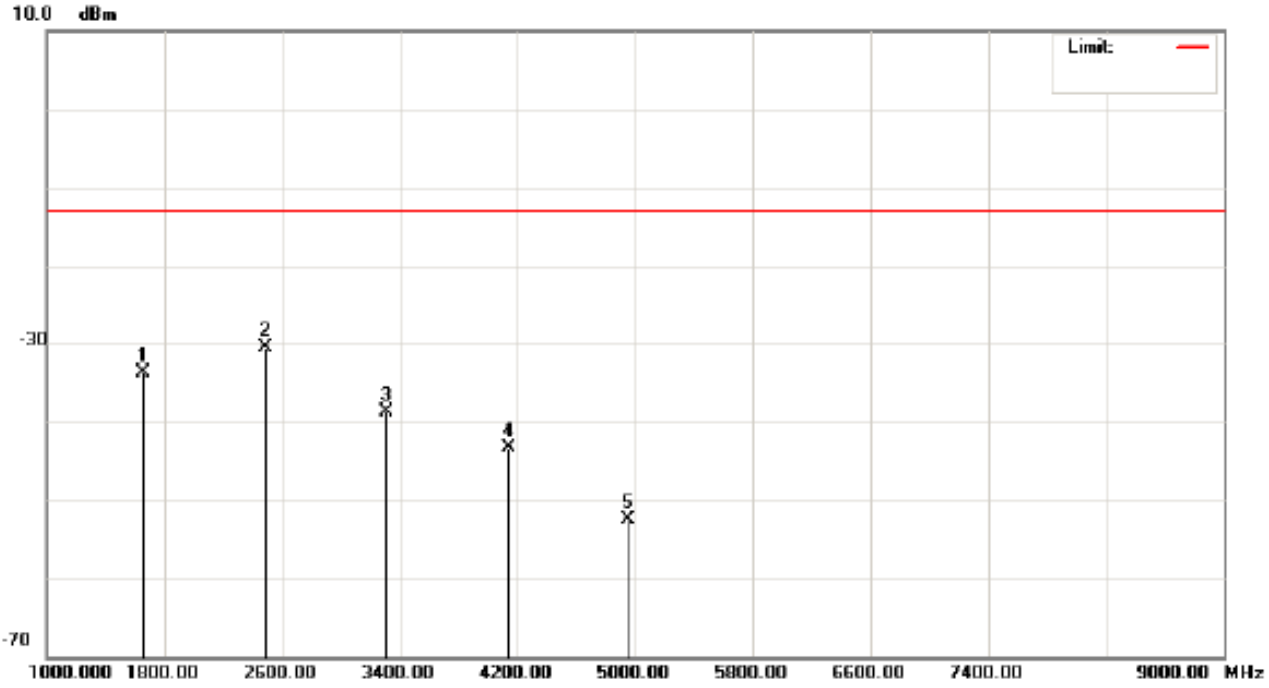
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 1GHz to 9GHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH190 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS) (dBm)	Limits (dBm)	Margins	Note
1673.320	V	Z	TX	-31.57	-13.0	-18.57	
2509.840	V	Z	TX	-23.40	-13.0	-10.40	
3346.480	V	Z	TX	-40.37	-13.0	-27.37	
4183.360	V	Z	TX	-47.19	-13.0	-34.19	
5019.600	V	Z	TX	-55.59	-13.0	-42.59	

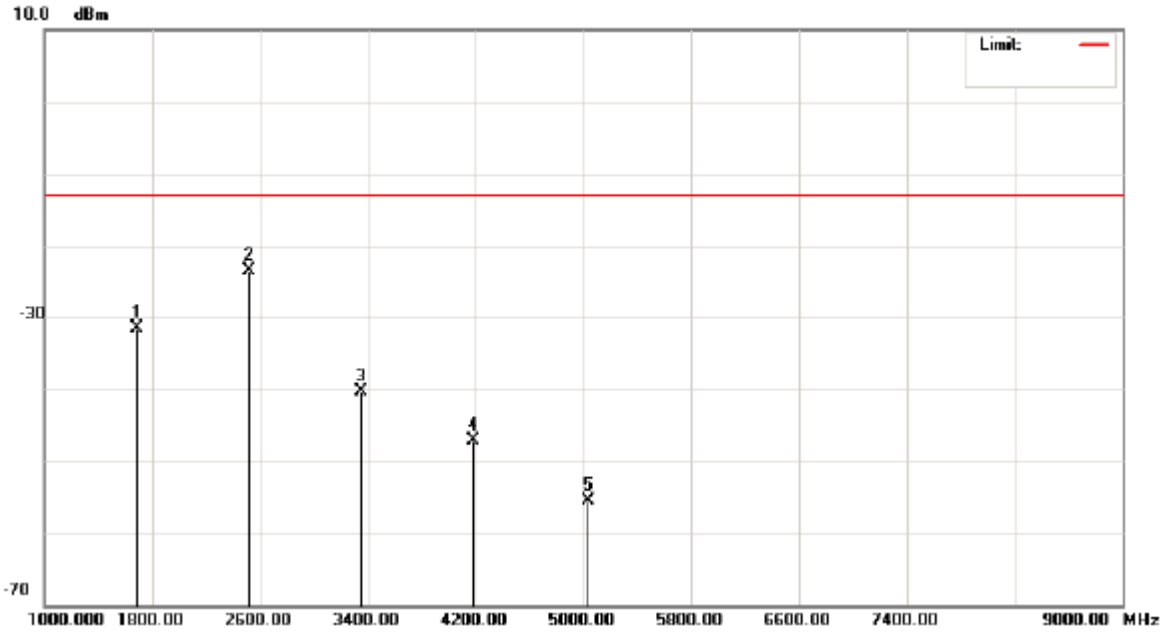
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 1GHz to 9GHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH190 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS)	Limits	Margins	Note
1673.240	H	Z	TX	-33.46	-13.0	-20.46	
2509.560	H	Z	TX	-30.06	-13.0	-17.06	
3346.440	H	Z	TX	-38.58	-13.0	-25.58	
4183.200	H	Z	TX	-44.83	-13.0	-31.83	
5019.800	H	Z	TX	-52.94	-13.0	-39.94	

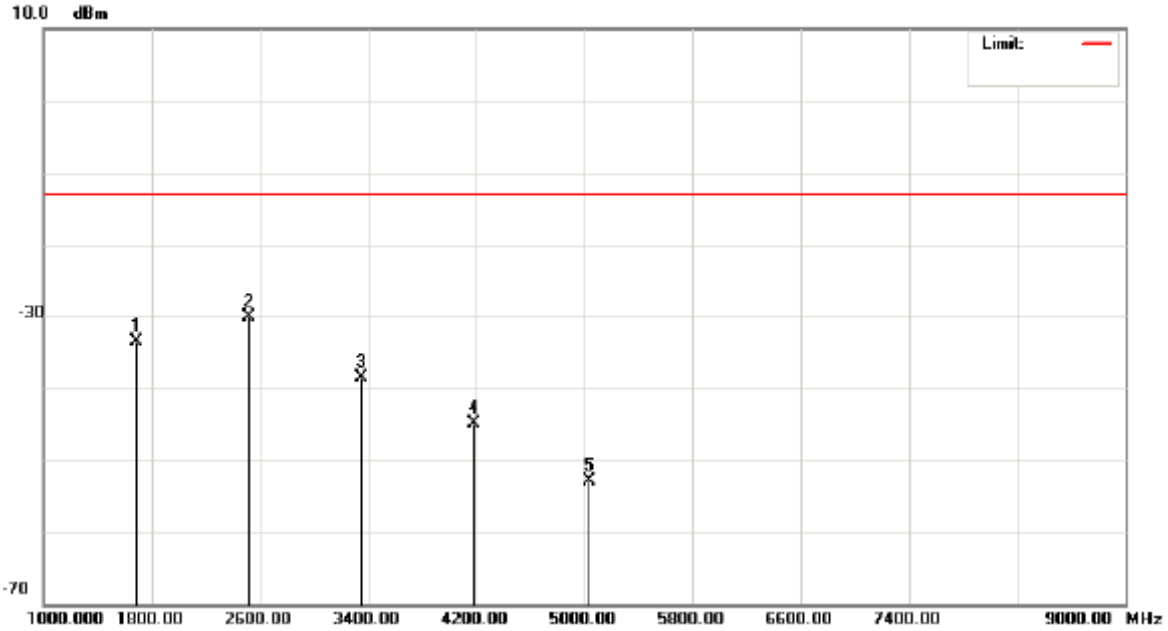
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 1GHz to 9GHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH251 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS) (dBm)	Limits (dBm)	Margins	Note
1697.500	V	Z	TX	-31.91	-13.0	-18.91	
2546.320	V	Z	TX	-27.97	-13.0	-14.97	
3395.440	V	Z	TX	-48.84	-13.0	-35.84	
4243.720	V	Z	TX	-50.19	-13.0	-37.14	

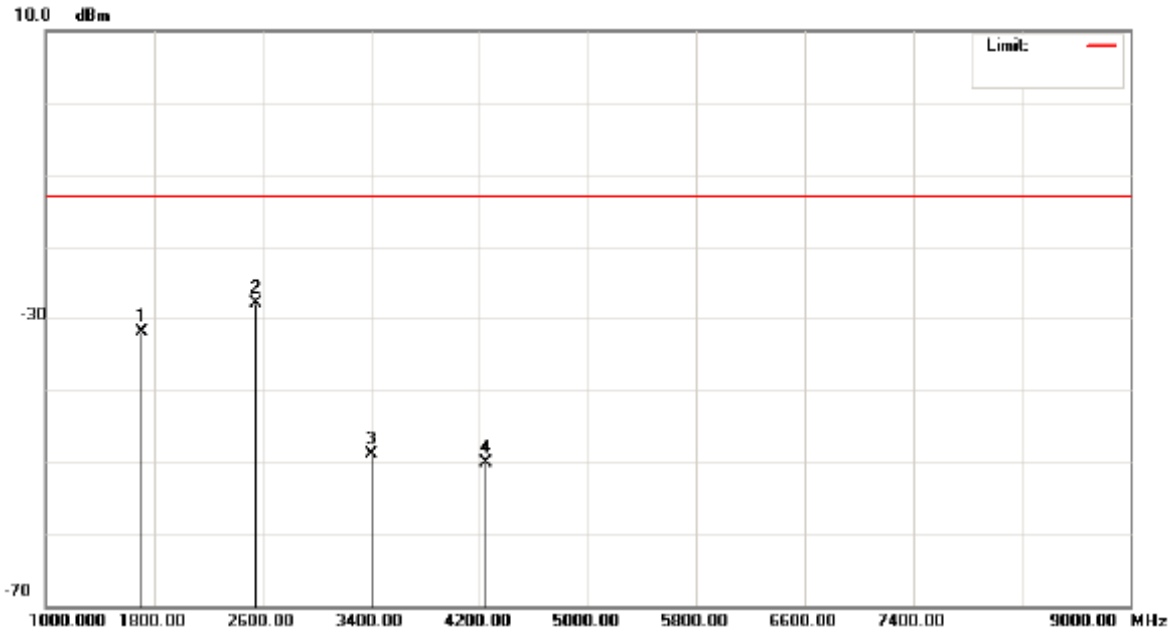
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 1GHz to 9GHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH251 for GPRS		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measured(FS)	Limits	Margins	Note
1697.640	H	Z	TX	-32.14	-13.0	-19.14	
2546.460	H	Z	TX	-35.67	-13.0	-22.67	
3395.700	H	Z	TX	-48.39	-13.0	-35.39	
4243.560	H	Z	TX	-51.34	-13.0	-38.34	

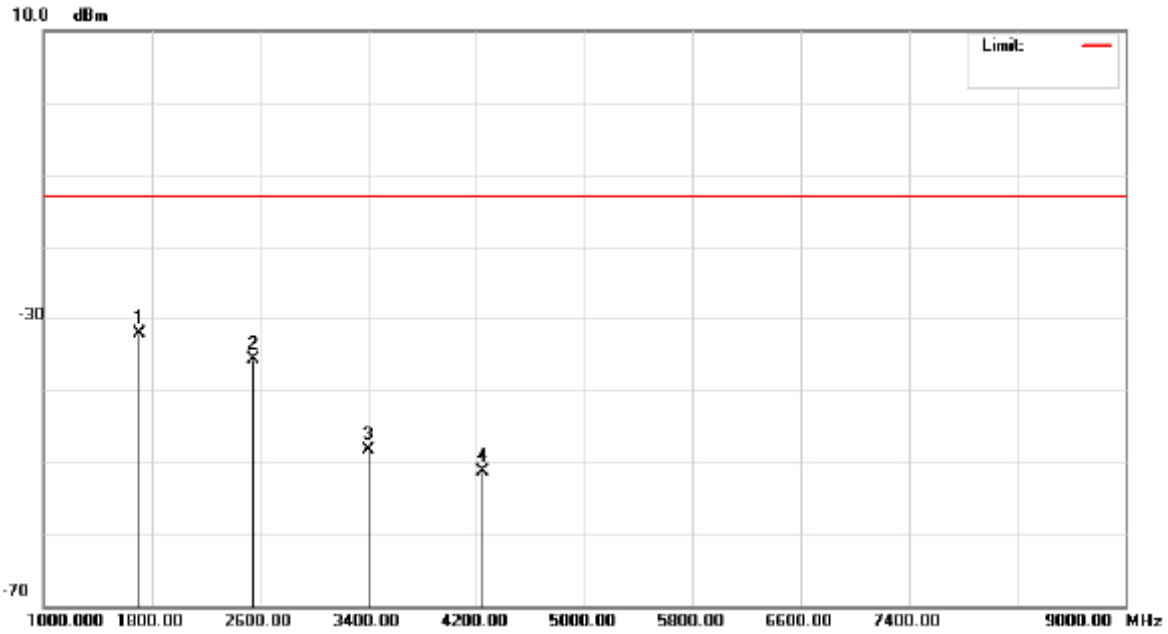
Remark：

(1) Reading in which marked as Peak means measurements by using is Peak Mode with Detector SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 1GHz to 9GHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



4.6 BAND EDGE EMISSIONS MEASUREMENT

4.6.1 LIMIT

According to FCC 22.917 specified that power of any emission outside of the authorized operating frequency rangesmust 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. Then we measure that the bandwidth is about 300kHz and the resolution bandwidth is 3kHz.

4.6.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	2 MHz
RB / VB	3 kHz /30 kHz
Trace	Max Hold
Sweep Time	Auto

4.6.3 TEST PROCEDURES

1. The EUT was set up for the maximum peak power with GPRS link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels, 128 and 251(low and high operational frequency range.)
2. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. The splitter loss and cable loss are the worst loss 4dB in the transmitted path track.
3. The center frequency of spectrum is the band edge frequency and span is 2 MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10KHz.
4. Record the max. trace plot into the test report.

4.6.4 TEST SETUP LAYOUT

This test setup layout is the same as that shown in section 4.2.4.

4.6.5 TEST DEVIATION

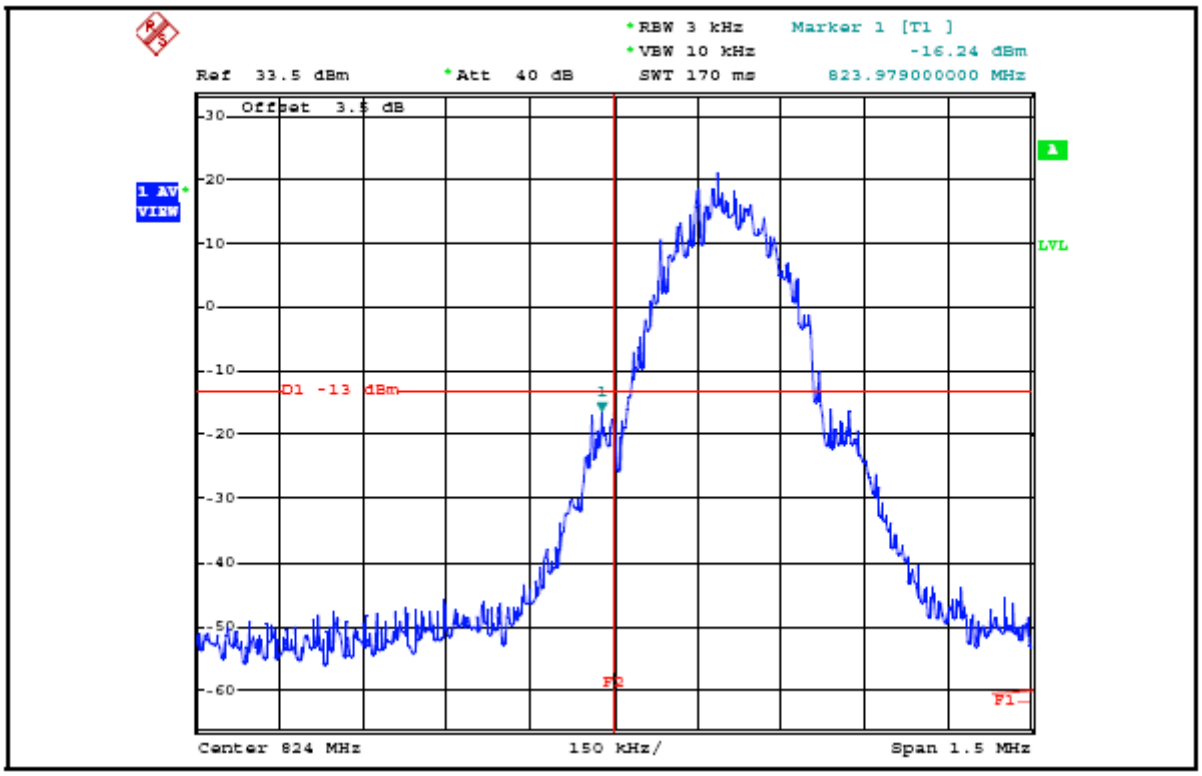
There is no deviation with the original standard.

4.6.6 EUT OPERATION DURING TEST

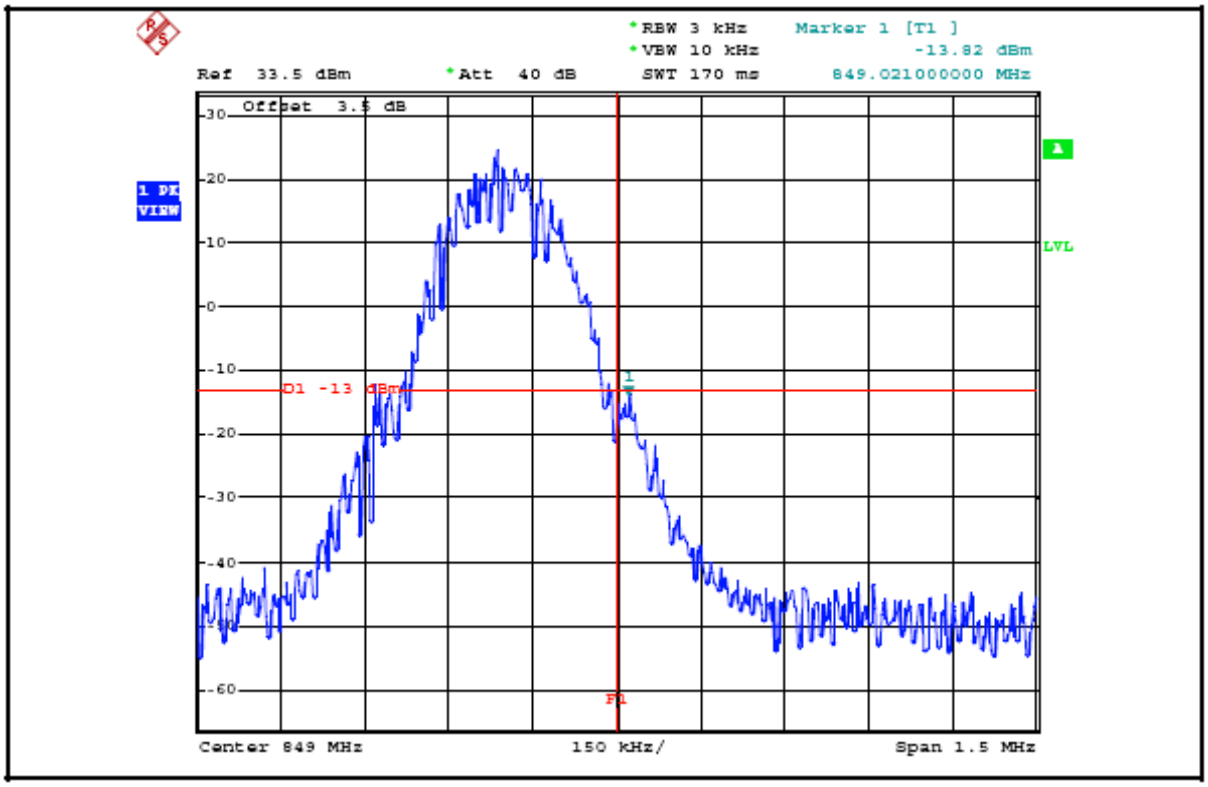
The BS simulator was used to set the TX channel and power level and modulate the TX signal.

4.6.7 TEST RESULTS OF BAND EDGE EMISSIONS

Band Edge on Configuration GPRS / Channel 128-CONDUCTED MODE



Band Edge on Configuration GPRS / Channel 251-CONDUCTED MODE



4.7 FREQUENCY STABILITY MEASUREMENT

4.7.1 LIMIT

According to the FCC part 2.4235 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 2.5 ppm 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℃~50℃.

4.7.2 MEASURING INSTRUMENTS AND SETTING

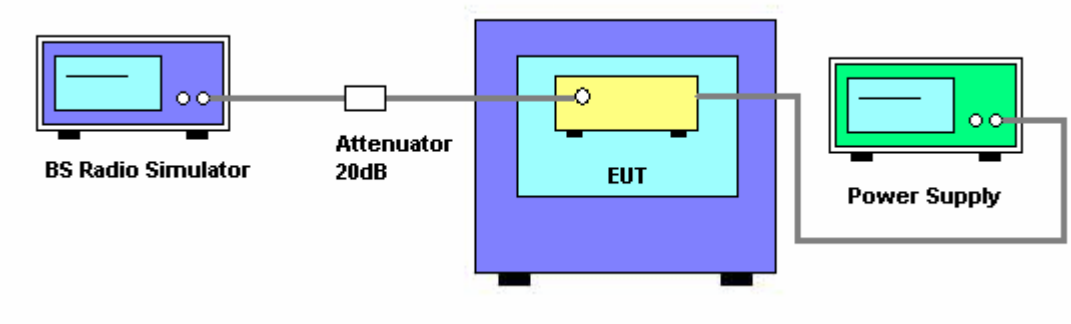
Please refer to section 5 in this report. The following table is the setting of the BS Simulator.

Spectrum Parameters	Setting
Frequency Error	The maximum of transmit frequency error

4.7.3 TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the BS Simulator.
2. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.
3. BS simulator used the frequency error function and measured the peak frequency error.
   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.
   The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. EUT 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.
5. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
6. Extreme temperature rule is -30°C~50°C.

4.7.4 TEST SETUP LAYOUT



4.7.5 TEST DEVIATION

There is no deviation with the original standard.

4.7.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.7.7 RESULTS OF FREQUENCY STABILITY

EUT：	Terminal	Model Name. ：	M0010
Temperature：	19 ℃	Relative Humidity：	66%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX CH 190(un-modulation)		

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.6	39	0.046	2.5
3.7	40	0.047	2.5
3.8	37	0.044	2.5
3.9	38	0.045	2.5
4.0	**41**	**0.049**	**2.5**
4.1	36	0.043	2.5
4.2	40	0.047	2.5
Max. Deviation (ppm)	**41**	**0.049**	**2.5**

Temperature vs. Frequency Stability

Temperature(℃)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
50	39	0.046	2.5
40	36	0.043	2.5
30	35	0.041	2.5
20	32	0.038	2.5
10	40	0.047	2.5
0	42	0.050	2.5
-10	47	0.056	2.5
-20	**49**	**0.058**	**2.5**
-30	48	0.057	2.5
Max. Deviation (ppm)	**49**	**0.058**	**2.5**

4.8 CONDUCTED EMISSION MEASUREMENT

4.8.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.8.2 MEASUREMENT INSTRUMENTS LIST AND SETTING

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00042991	Jan. 24, 2009
2	LISN	EMCO	3816/2	00042990	Jan. 24, 2009
3	Pulse Limiter	Electro-Metrics	EM-7600	112644	Nov. 27, 2008
4	50Ω Terminator	N/A	N/A	N/A	May.13, 2009
5	Test Cable	N/A	C01	N/A	Nov. 27, 2008
6	EMI Test Receiver	R&S	ESCI	100082	Mar. 08, 2008

Remark: ” N/A” denotes No Model Name. , Serial No. or No Calibration specified.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

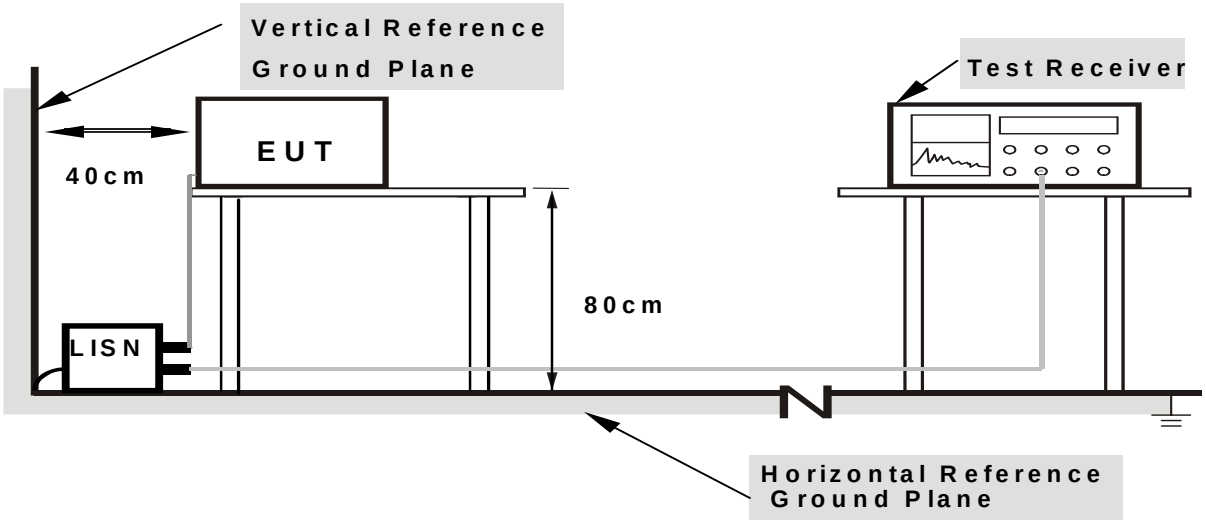
4.8.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.8.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.8.7 TEST RESULTS

EUT：	Terminal	Model Name. ：	M0010
Temperature：	18 ℃	Relative Humidity：	60%
Pressure：	1008hPa	Test Voltage ：	AC 120V/60Hz
Test Mode：	Mode 4 - Normal Link with cradle use (full system)		

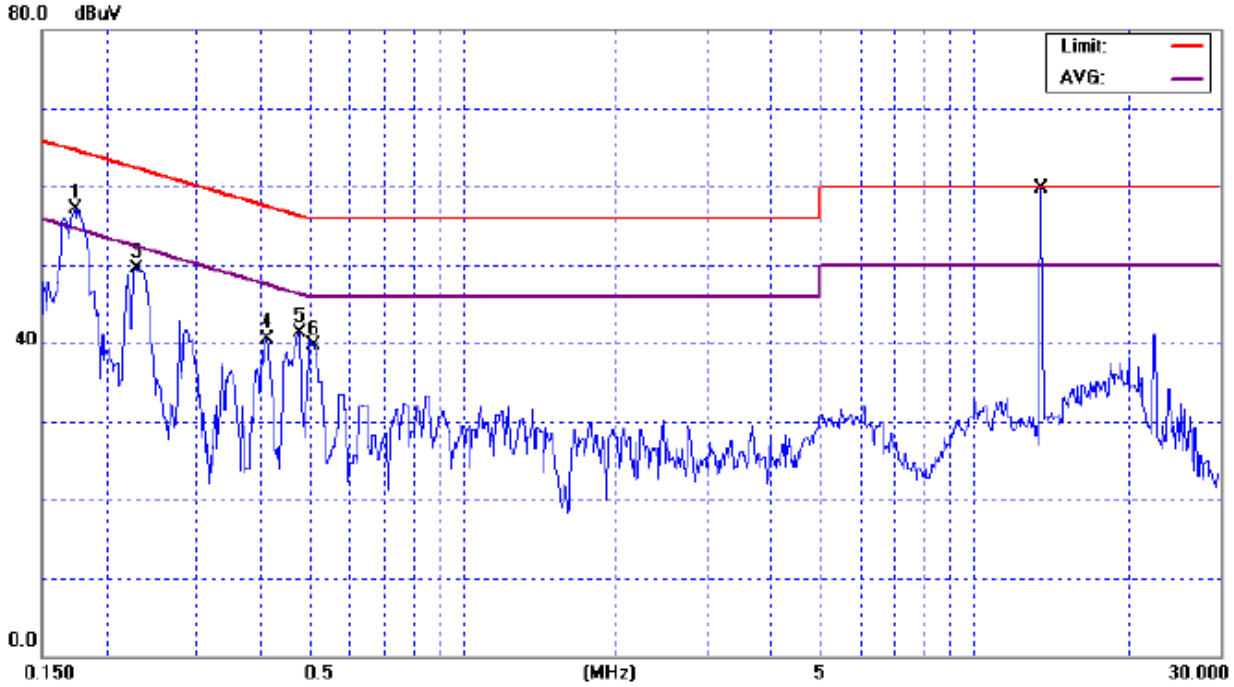
Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.17	Line	57.10	40.82	64.78	54.78	-13.96	(QP)
0.23	Line	49.59	*	62.51	52.51	-12.92	(QP)
0.41	Line	40.42	*	57.61	47.61	-17.19	(QP)
0.48	Line	41.21	*	56.41	46.41	-15.20	(QP)
0.51	Line	39.66	*	56.00	46.00	-16.34	(QP)
13.55	Line	59.15	58.95	60.00	50.00	8.95	Note (3)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(2) Measuring frequency range from 150KHz to 30MHz。

(3) Tx Fundamental, For reference only. Please refer to the next page.



EUT：	Terminal	Model Name. ：	M0010
Temperature：	18 ℃	Relative Humidity：	60%
Pressure：	1008hPa	Test Voltage ：	AC 120V/60Hz
Test Mode：	Mode 4 - Normal Link with cradle use (full system)		

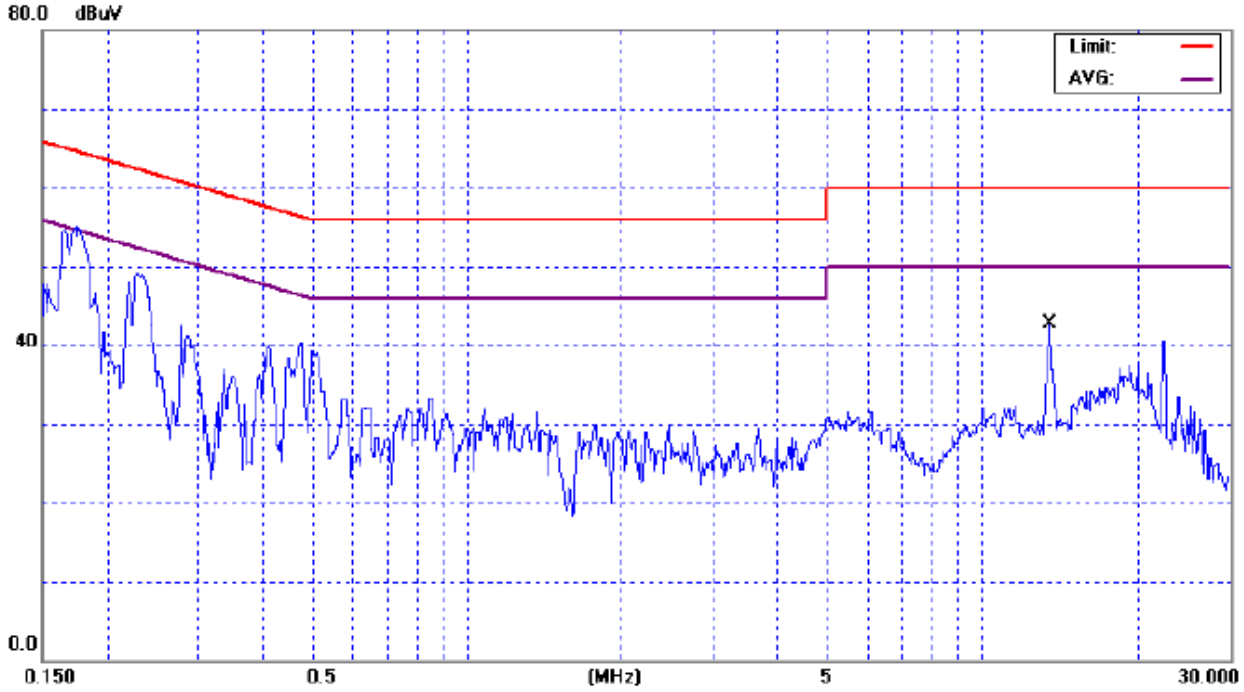
Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
13.55	Line	43.16	36.63	60.00	50.00	-13.37	(AV)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(2) Measuring frequency range from 150KHz to 30MHz。

(3) a) First, perform the AC line conducted tests with the antenna attached to make sure the device complies with the conducted limits outside the transmitter's fundamental emission band.
b) Second, retest with a dummy load to make sure the device complies with the conducted limits inside the transmitter's fundamental emission band. Only the fundamental TX emission band needs to be retested.



EUT：	Terminal	Model Name. ：	M0010
Temperature：	18 ℃	Relative Humidity：	60%
Pressure：	1008hPa	Test Voltage ：	AC 120V/60Hz
Test Mode：	Mode 4 - Normal Link with cradle use (full system)		

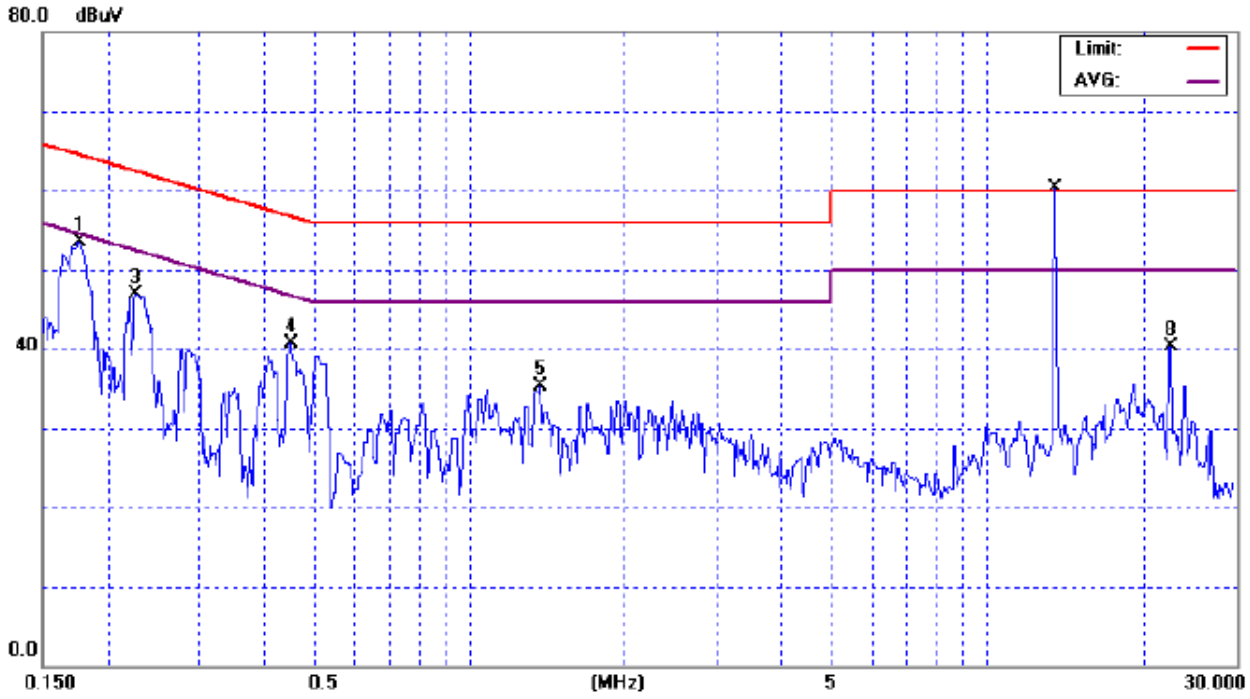
Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.18	Neutral	53.49	37.34	64.68	54.68	-17.39	(AV)
0.23	Neutral	46.82	*	62.58	52.58	-15.76	(QP)
0.45	Neutral	40.61	*	56.88	46.88	-16.27	(QP)
1.37	Neutral	35.25	*	56.00	46.00	-20.75	(QP)
13.55	Neutral	59.39	59.39	60.00	50.00	9.39	Note (3)
22.55	Neutral	40.28	*	60.00	50.00	-19.72	(QP)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(2) Measuring frequency range from 150KHz to 30MHz。

(3) Tx Fundamental, For reference only. Please refer to the next page.



EUT：	Terminal	Model Name. ：	M0010
Temperature：	18 ℃	Relative Humidity：	60%
Pressure：	1008hPa	Test Voltage ：	AC 120V/60Hz
Test Mode：	Mode 4 - Normal Link with cradle use (full system)		

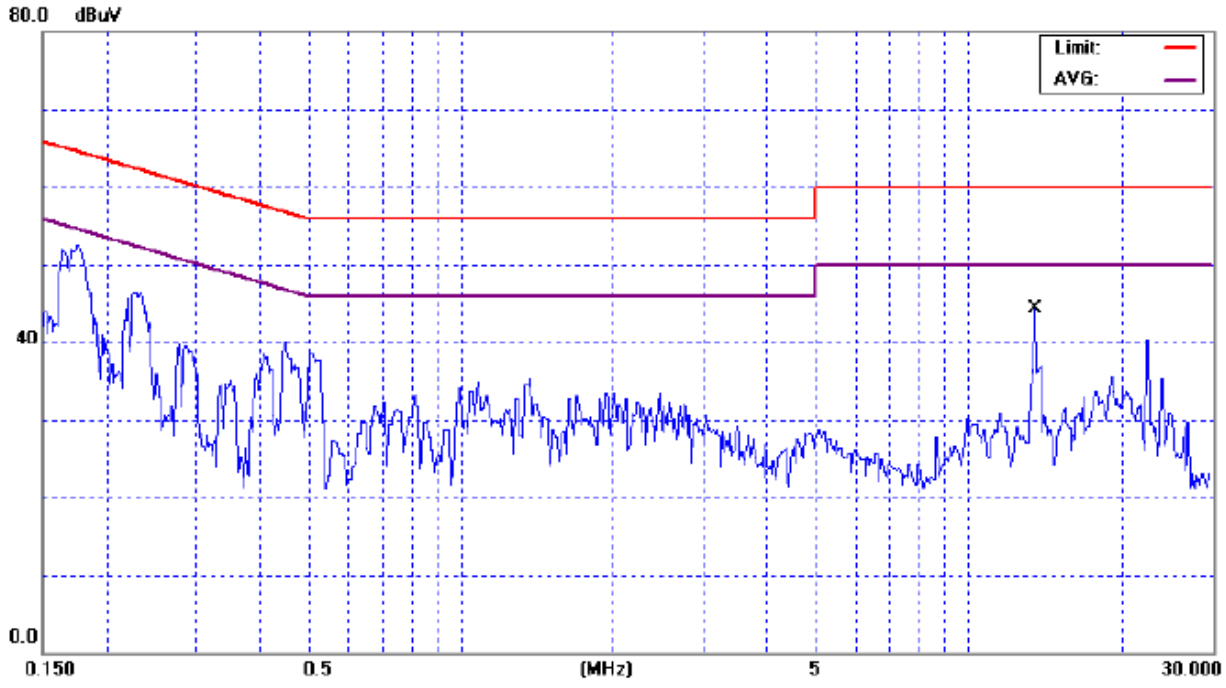
Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
13.55	Neutral	33.67	28.14	60.00	50.00	-11.27	(AV)

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform。In this case, a " * " marked in AVG Mode column of Interference Voltage Measured。

(2) Measuring frequency range from 150KHz to 30MHz。

(3) a) First, perform the AC line conducted tests with the antenna attached to make sure the device complies with the conducted limits outside the transmitter's fundamental emission band.
b) Second, retest with a dummy load to make sure the device complies with the conducted limits inside the transmitter's fundamental emission band. Only the fundamental TX emission band needs to be retested.



5. LIST OF MEASUREMENT EQUIPMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	Schwarzbeck	VULB 9160	3058	Nov. 27, 2008
2	Test Cable	N/A	10M_OS02	N/A	Nov. 27, 2008
3	Test Cable	N/A	OS02-1/-2/-3	N/A	Nov. 27, 2008
4	Pre-Amplifier	Anritsu	MH648A	M09961	Nov. 27, 2008
5	EMI Test Receiver	R&S	ESCI	100082	Jan. 31, 2008
6	Antenna Mast	Chance Most	CMTB-1.5	N/A	N/A
7	Turn Table	Chance Most	CMTB-1.5	N/A	N/A
8	Spectrum Analyzer	R&S	FSP_40	100129	Jan. 07, 2009
9	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-325	Oct. 24, 2008
10	Horn Antenna	Schwarzbeck	BBHA9170	9170187	Oct. 24, 2008
11	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Mar. 10, 2008
12	Microflex Cable	United Microwave	57793	1m	Mar. 10, 2008
13	Microflex Cable	United Microwave	A30A30-5006	10M	Jul. 07, 2008
14	Universal Radio Communication Tester	R&S	CMU200	109369	Jan. 18, 2009
15	High Pass Filter	MICRO-TRONICS	HPM50108	020	Oct. 03, 2008
16	High Pass Filter	MICRO-TRONICS	HPM50111	021	Oct. 03, 2008
17	High Pass Filter	MICRO-TRONICS	HPM50702	029	Oct. 03, 2008
18	Attenuator	RADIALL	R41572000	0603033073	NCR
19	Power Divider	Agilent	87302C (0.5-26.5GHz)	3239A00760	NCR
20	Signal Generator	R&S	SMT 06	832080/007	Aug. 01, 2008
21	Temperature & Humitidy Chamber	GIANT FORCE	GTH-056P	GF-94454-1	Jul. 23, 2008

6. EUT TEST PHOTO

Conducted Measurement Photos
Normal Link with cradle use (full system)

Radiated Measurement Photos
EUT Orthogonal Axis : Z