



Neutron Engineering Inc.

# FCC Radio Test Report

**FCC ID: YDUERD100**

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

**Issued Date** : Dec. 08, 2010  
**Project No.** : 1011C301  
**Equipment** : PCA, EVDO MINI-PCI EXPRESS CARD  
CDMA MODEM  
**Model Name** : MC5728V  
**Applicant** : ADVANCED MULTI TECH PTE. LTD  
**Address** : No. 10 Anson Road #15-17/18, International  
Plaza Singapore 079903

**Tested by:**

Neutron Engineering Inc. EMC Laboratory

**Date of Receipt:** Nov. 26, 2010

**Date of Test:**

Nov. 26, 2010 ~ Dec. 07, 2010

Testing Engineer :

(Ivan Cao)

Technical Manager :

(Leo Hung)

Authorized Signatory :

(Steven Lu)

**NEUTRON ENGINEERING INC.**

No.3, Jinshagang 1st Road, ShiXia, Dalang Town,  
Dong Guan, China. 523792

TEL : +86-769-8318-3000 FAX : +86-769-8319-6000



### **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.**

**Neutron's** reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **Neutron** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **Neutron** issued reports.

**Neutron's** reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **Neutron-self**, extracts from the test report shall not be reproduced except in full with **Neutron's** authorized written approval.

**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.



<b>Table of Contents</b>	<b>Page</b>
<b>1 . CERTIFICATION</b>	<b>5</b>
<b>2 . SUMMARY OF TEST RESULTS</b>	<b>6</b>
2.1 TEST FACILITY	7
2.2 MEASUREMENT UNCERTAINTY	7
<b>3 . GENERAL INFORMATION</b>	<b>8</b>
3.1 GENERAL DESCRIPTION OF EUT	8
3.2 DESCRIPTION OF TEST MODES	10
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	10
3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	11
3.5 DESCRIPTION OF SUPPORT UNITS	12
<b>4 . TEST RESULT</b>	<b>13</b>
4.1 RADIATED RF OUTPUT POWER MEASUREMENT	13
4.1.1 LIMIT	13
4.1.2 MEASURING INSTRUMENTS AND SETTING	13
4.1.3 TEST PROCEDURE	13
4.1.4 TEST SETUP LAYOUT	14
4.1.5 TEST DEVIATION	14
4.1.6 EUT OPERATION DURING TEST	14
4.1.7 TEST RESULT OF RADIATED RF OUTPUT POWER	16
4.2 99% OCCUPIED BANDWIDTH MEASUREMENT	17
4.2.1 LIMIT	17
4.2.2 MEASURING INSTRUMENTS AND SETTING	17
4.2.3 TEST PROCEDURE	17
4.2.4 TEST SETUP LAYOUT	17
4.2.5 TEST DEVIATION	17
4.2.6 EUT OPERATION DURING TEST	17
4.2.7 TEST RESULT OF 99% OCCUPIED BANDWIDTH	18
4.3 SPURIOUS EMISSIONS AT ANTENNA PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEMS WEASUREMENT	20
4.3.1 LIMIT	20
4.3.2 MEASURING INSTRUMENTS AND SETTING	20
4.3.3 TEST PROCEDURES	20
4.3.4 TEST SETUP LAYOUT	20
4.3.5 TEST DEVIATION	20
4.3.6 EUT OPERATION DURING TEST	20
4.3.7 TEST RESULT OF SPURIOUS EMISSIONS AT ANTENNA PCA,EVDO MINI-PCI	



<b>Table of Contents</b>	<b>Page</b>
<b>EXPRESS CARD CDMA MODEMS</b>	<b>21</b>
<b>4.4 SPURIOUS RADIATED EMISSIONS MEASUREMENT</b>	<b>24</b>
4.4.1 LIMIT	24
4.4.2 MEASURING INSTRUMENTS AND SETTING	24
4.4.3 TEST PROCEDURES	24
4.4.4 TEST SETUP LAYOUT	25
4.4.5 TEST DEVIATION	25
4.4.6 EUT OPERATION DURING TEST	25
4.4.7 RESULTS OF TRANSMITTER SPURIOUS EMISSIONS BELOW 1GHZ	26
4.4.8 RESULTS OF TRANSMITTER SPURIOUS EMISSIONS ABOVE 1GHZ	32
<b>4.5 BAND EDGE EMISSIONS MEASUREMENT</b>	<b>38</b>
4.5.1 LIMIT	38
4.5.2 MEASURING INSTRUMENTS AND SETTING	38
4.5.3 TEST PROCEDURES	38
4.5.4 TEST SETUP LAYOUT	38
4.5.5 TEST DEVIATION	38
4.5.6 EUT OPERATION DURING TEST	38
4.5.7 TEST RESULTS OF BAND EDGE EMISSIONS	39
<b>4.6 FREQUENCY STABILITY MEASUREMENT</b>	<b>40</b>
4.6.1 LIMIT	40
4.6.2 MEASURING INSTRUMENTS AND SETTING	40
4.6.3 TEST PROCEDURES	40
4.6.4 TEST SETUP LAYOUT	40
4.6.5 TEST DEVIATION	40
4.6.6 EUT OPERATION DURING TEST	40
4.6.7 RESULTS OF FREQUENCY STABILITY	41
<b>4.8 CONDUCTED EMISSION MEASUREMENT</b>	<b>42</b>
4.8.1 POWER LINE CONDUCTED EMISSION LIMITS	42
4.8.2 MEASUREMENT INSTRUMENTS LIST AND SETTING	42
4.8.3 TEST PROCEDURE	43
4.8.4 DEVIATION FROM TEST STANDARD	43
4.8.5 TEST SETUP	43
4.8.6 EUT OPERATING CONDITIONS	44
4.8.7 TEST RESULTS	45
<b>5. LIST OF MEASUREMENT EQUIPMENTS</b>	<b>47</b>
<b>6. EUT TEST PHOTO</b>	<b>48</b>



## **1. CERTIFICATION**

Equipment: PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM

Model Name: MC5728V

Applicant: ADVANCED MULTI TECH PTE. LTD

F a c t o r y : Chuanjie Precision Industry ( Shenzhen) Co., Ltd

A d d r e s s : 3F ,Building D .No1 of Shihuan Road, Shuitian

Date of Test: Nov. 26, 2010 ~ Dec. 07, 2010

Test Item: ENGINEERING SAMPLE

Standards: 47 CFR FCC Part 24 Subpart E & ANSI C63.4 : 2003

47 CFR FCC Part 2 & ANSI/TIA-603-C-2004

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-2-1011C301) 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).

**2. SUMMARY OF TEST RESULTS**

Test procedures according to the technical standards:

Applied Standard: FCC Part 24 & Part 2 / IC RSS-133				
Part	Standard Section	Test Item	Judgment	Remark
4.1	2.1047(d)	Modulation Characteristics	PASS	
4.2	2.1046/24.232	Radiated RF Output	PASS	
4.3	2.1049/24.238(b)	99% Occupied Bandwidth	PASS	
4.4	2.1051/24.238(a)	Spurious Emissions at Antenna Terminal	PASS	
4.5	2.1053/24.238(a)	Spurious Radiated Emissions	PASS	
4.6	24.238(b)	Band Edge	PASS	
4.7	2.1055/24.235	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 **DG-C02/ DG-CB02** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792

Neutron's test firm number is 319330

## 2.2 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:

The reported uncertainty of measurement  $y \pm U$ , where expanded 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
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

### B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
DG-CB02	CISPR	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	
Model Name	MC5728V	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	
	Operation Frequency:	1851.25MHz~1908.75 MHz
	Modulation Type:	16-QAM/QPSK/8PSK (CDMA/1xEVDO850)
	Channel Band Width (99%)	1290.00 KHz
	Antenna Type	Please see Note 3.
	Conducted Output Power	1x EVDO REL 0: 28.23 dBm 1x EVDO REV A: 29.33 dBm
	Max. EIRP Power	1x EVDO REV 0: 29.87 dBm 1x EVDO REV A: 30.97 dBm
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.		
Channel List	Please refer to the Note 2.	
Power Source	#1 DC Voltage supplied from AC/DC Adapter. Brand : Fleet /Model :FCC050100U	
	#2 DC Voltage supplied from Host system #3 DC Voltage supplied from Lithium-ion Battery. Model name: PocketBook Pro	
Power Rating	#1 I/P AC 100~240V ~0.2A 50/60Hz O/P DC 5V 1A #2 AC 120V/60Hz #3 DC 3.7V 1530mAh	

**Note:**

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





2.

<b>TX Frequency</b>	:	824.7-848.31 MHz (CDMA / 1xEVDO 850)
		1851.25-1908.75 MHz (CDMA / 1xEVDO 1900)
<b>RX Frequency</b>	:	869.7 - 893.31 MHz (CDMA / 1xEVDO 850)
		1931.25- 1988.75MHz (CDMA / 1xEVDO 1900)

3.

Table for Filed Antenna @GSM850/PCS

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	SkyCorss Inc.	EP1	PIFA	N/A	1.64@1920 MHz

4. The hardware version: EBR – 100

5. The software version: W603.15.2

6. This is to request a Class II permissive change for **FCC ID: YDUERD100**, originally granted on **12/22/2010**.

7. The major change filed under this application is :  
**Change #1:** alternate a portable configuration.

**Note :** The EUT is a PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM (Model name: MC5728V) which built in the PocketBook eReader (Model name: PocketBook 603) with function of 1x EVDO REL 0/REV A (Cellular /PCS band) **And with FCC ID: YDUPB602R1 which already granted on 10/05/2010) with function of BT/WLAN\*11B/G/N(HT20)**



### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly 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
Radiated RF Output	1xEVDO REV 0 /1xEVDO REV A	25/600/1175
Spurious Radiated Emissions	1xEVDO REV A	25/600/1175
Band Edge Emissions	1xEVDO REV A	25/1175
Frequency Stability	1xEVDO REV A	600
99% Occupied Bandwidth	1xEVDO REV A	25/600/1175
Spurious Emissions at Antenna Terminal	1xEVDO REV A	25/600/1175

For Conducted Emission	
Final Test Mode	Description
Mode 1	1xEVDO REV A Mode

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 positioning 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 25, 600 and 1175 were pre-tested in chamber. The channel 600, the worst case, was chosen for final test. Above 1GHz, the channel 25, 600 and 1175 were tested individually.

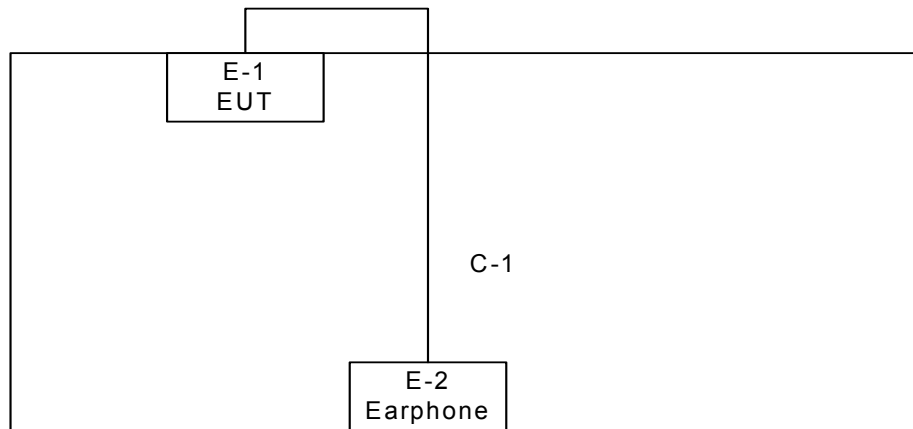
### 3.3 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

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 1xEVDO REV A. During the test, Power Control level was set to 0, it is chosen as the worst case.



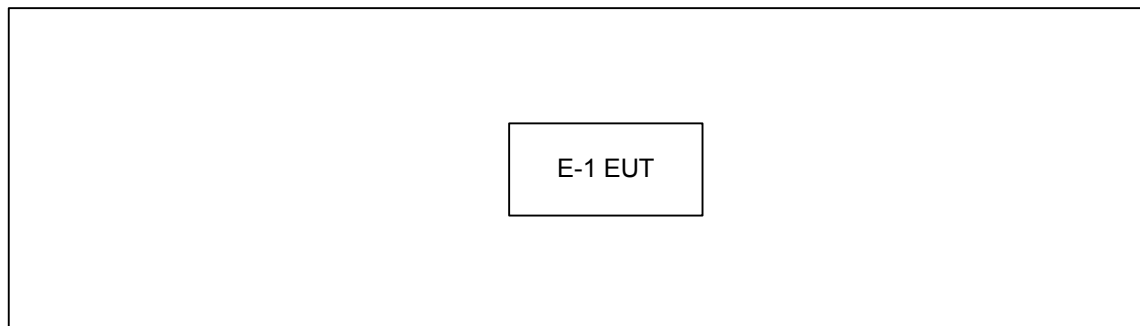
### 3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

**Conduction: Link mode**



C-1: Audio Cable

**Radiated: Link mode**





### 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	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	N/A	C5728V	YDUERD100	N/A	EUT
E-2	Earphone	APPLE	N/A	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2M	

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 RADIATED RF OUTPUT POWER MEASUREMENT**

#### **4.1.1 LIMIT**

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) specified 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 MEASURING INSTRUMENTS AND SETTING**

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

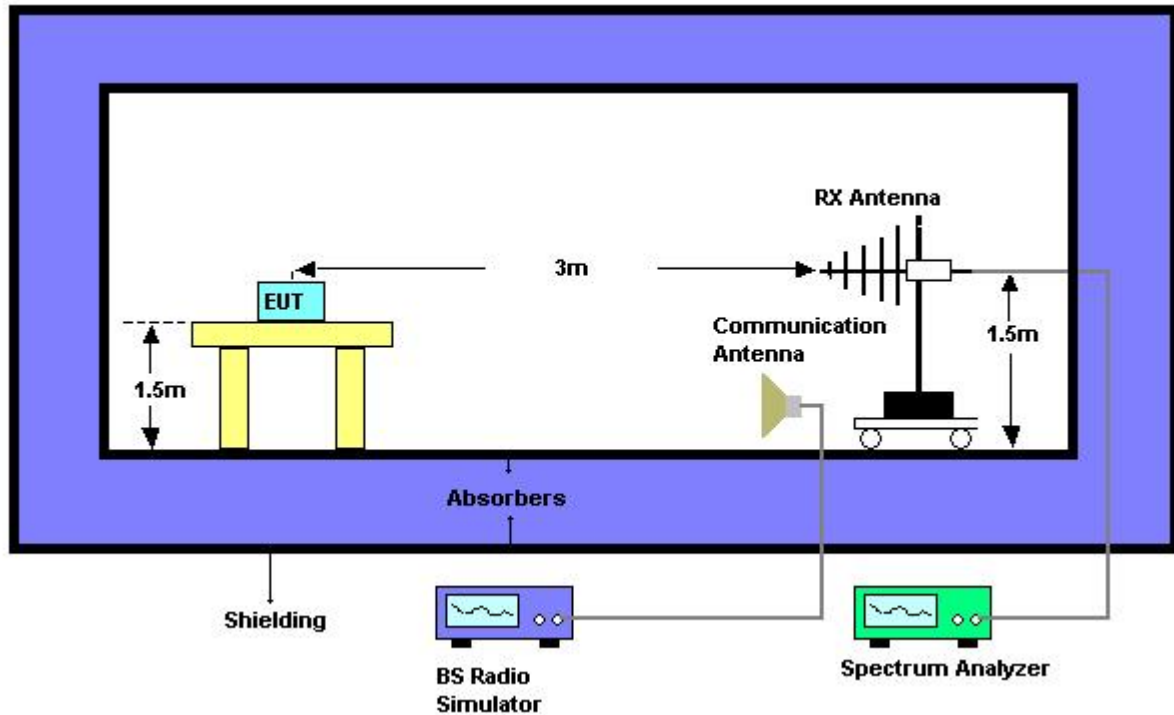
<b>Spectrum Parameters</b>	<b>Setting</b>
Attenuation	Auto
Center Frequency	Low / middle / high channels
Span Frequency	10MHz
RB / VB	3MHz / 3MHz for Peak

#### **4.1.3 TEST PROCEDURE**

1. The EUT was set up for the maximum peak power with 1XEVD0 link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 25, 600 and 1175 (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.

#### 4.1.4 TEST SETUP LAYOUT

##### EIRP Power Measurement



#### 4.1.5 TEST DEVIATION

There is no deviation with the original standard.

#### 4.1.6 EUT OPERATION DURING TEST

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



#### 4.1.7 TEST RESULT OF CONDUCTED RF OUTPUT POWER

EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH 25/600/1175		

##### PCS 1xEVDO REV 0

Channel	Frequency	Peak Output Power (dBm)	Max. Limit (dBm)	Result
25	1851.25 MHz	27.78	33	Complies
600	1880.00 MHz	28.23	33	Complies
1175	1908.70 MHz	27.91	33	Complies

##### PCS 1xEVDO REV A

Channel	Frequency	Peak Output Power (dBm)	Max. Limit (dBm)	Result
25	1851.25 MHz	28.32	33	Complies
600	1880.00 MHz	29.33	33	Complies
1175	1908.70 MHz	28.83	33	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 +28dBm to +19dBm (nominal) by 2dB steps. Consequently the EUT meets the requirement of Part24.232(c).



#### 4.1.8 TEST RESULT OF RADIATED RF OUTPUT POWER

EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH 25/600/1175		

##### PCS 1xEVDO REV 0 (EIRP)

Channel	Frequency	Peak Output Power (dBm)	Max. Limit (dBm)	Result
25	1851.25 MHz	29.42	33	Complies
600	1880.00 MHz	29.87	33	Complies
1175	1908.70 MHz	29.55	33	Complies

##### PCS 1xEVDO REV A (EIRP)

Channel	Frequency	Peak Output Power (dBm)	Max. Limit (dBm)	Result
25	1851.25 MHz	29.96	33	Complies
600	1880.00 MHz	30.97	33	Complies
1175	1908.70 MHz	30.47	33	Complies

#### REMARKS:

- Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
- Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)
- The EUT does employ a power control function by which the output power is controlled from +28dBm to +19dBm (nominal) by 2dB steps. Consequently the EUT meets the requirement of Part24.232(c).



## 4.2 99% OCCUPIED BANDWIDTH MEASUREMENT

### 4.2.1 LIMIT

According to FCC 24.238(b) 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.

### 4.2.2 MEASURING INSTRUMENTS AND SETTING

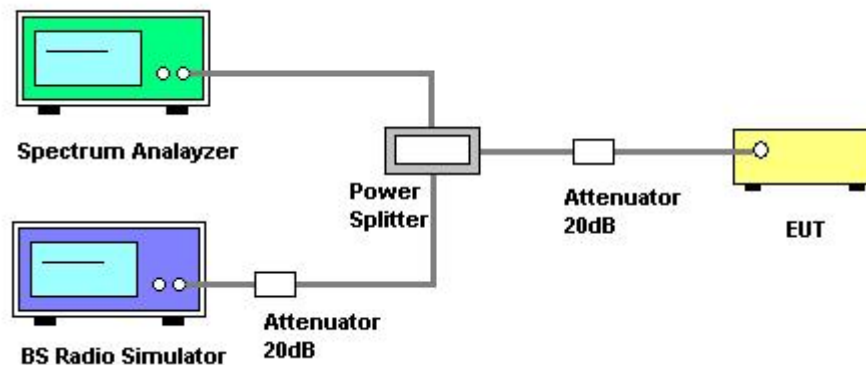
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	30 kHz
VB	100 kHz
Trace	Max Hold

### 4.2.3 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..

### 4.2.4 TEST SETUP LAYOUT



### 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.



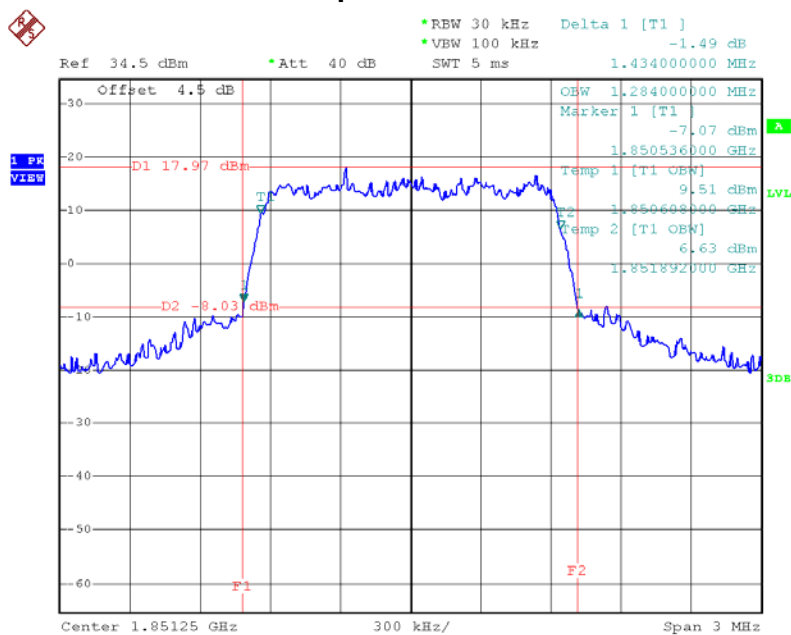
#### 4.2.7 TEST RESULT OF 99% OCCUPIED BANDWIDTH

EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH 25/600/1175		

#### Configuration 1xEVDO REV A

Channel	Frequency	99% OBW (kHz)	-26dBc Bandwidth	Result
25	1851.25 MHz	1284.00	1434.00	Complies
600	1880.00 MHz	1284.00	1452.00	Complies
1175	1908.70 MHz	1290.00	1470.00	Complies

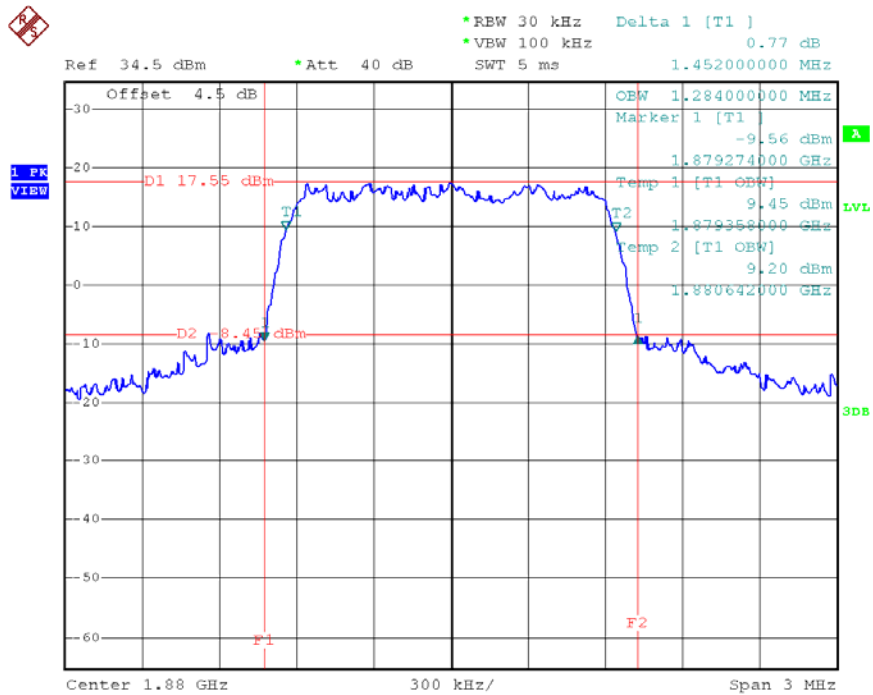
#### 99% Occupied Bandwidth channel 25



Date: 1.DEC.2010 17:45:51

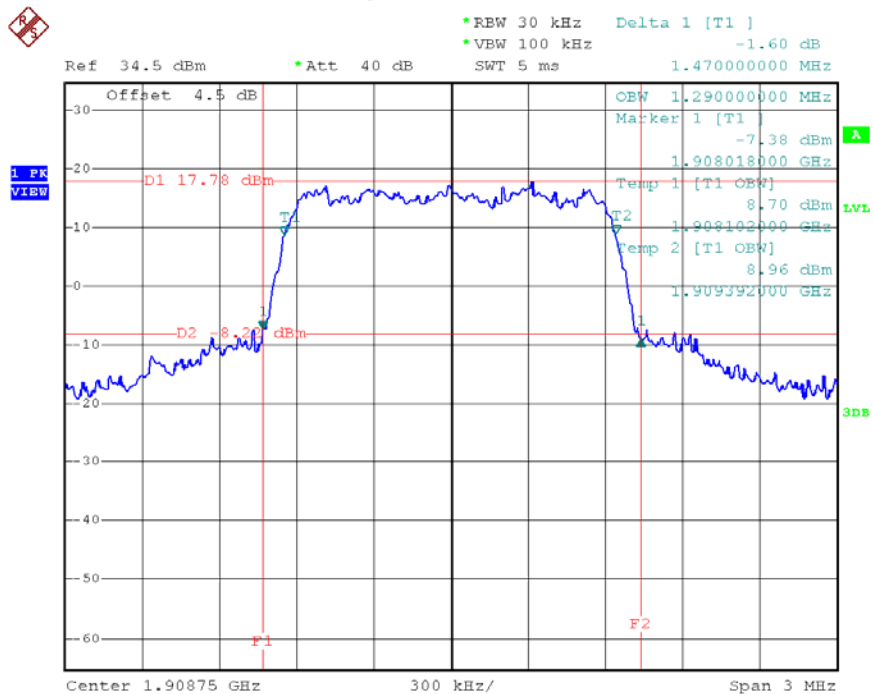


### 99% Occupied Bandwidth channel 600



Date: 1.DEC.2010 17:55:24

### 99% Occupied Bandwidth channel 1175



Date: 1.DEC.2010 18:00:54

### 4.3 SPURIOUS EMISSIONS AT ANTENNA PCA, EVDO MINI-PCI EXPRESS CARD CDMA MODEMS WEASUREMENT

#### 4.3.1 LIMIT

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 limit translates in the relevant power range (1 to 0.001W). At 1W (Power Control Level 0) the specified minimum attenuation becomes 43dB and the limit of emission equal to -13dBm.

#### 4.3.2 MEASURING INSTRUMENTS AND SETTING

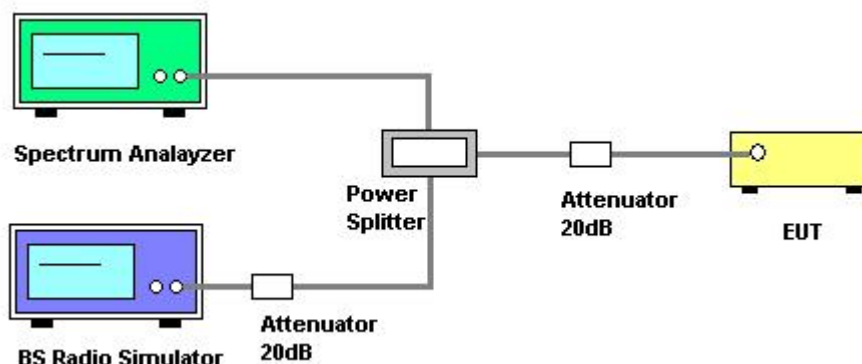
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Start Frequency	30MHz
Stop Frequency	10th carrier harmonic
RB / VB	1 MHz / 1MHz for Peak

#### 4.3.3 TEST PROCEDURES

1. The EUT was set up for the maximum peak power with 1xEVDO REV A link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 25,600,1175(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 4.5dB 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 10GHz, it shall be connected to the high pass filter attenuated the carried frequency. The spectrum set RB/VB 1MHz.

#### 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

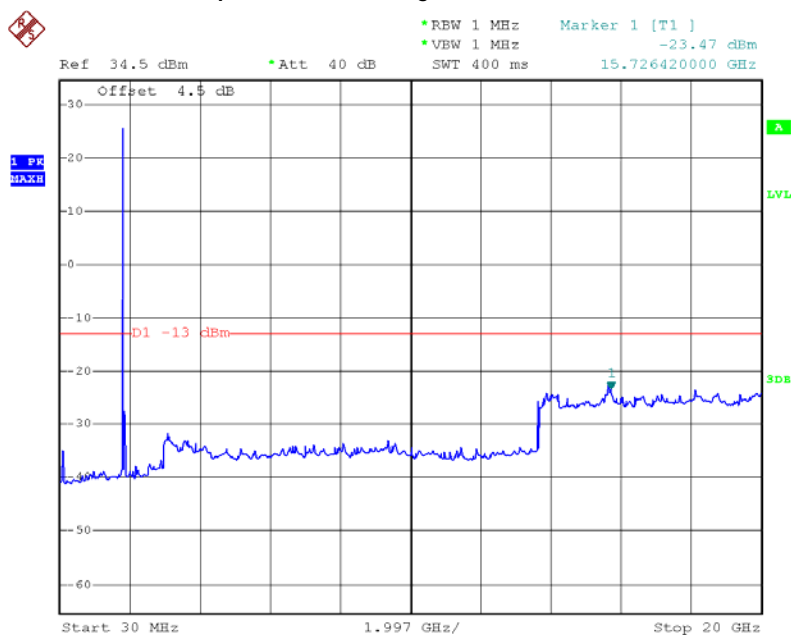
The BS simulator was used to set the TX channel and power level and modulate the TX signal.



#### 4.3.7 TEST RESULT OF SPURIOUS EMISSIONS AT ANTENNA PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEMS

EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH 25		

##### Conducted Spurious of Configuration 1xEVDO REV A channel 25

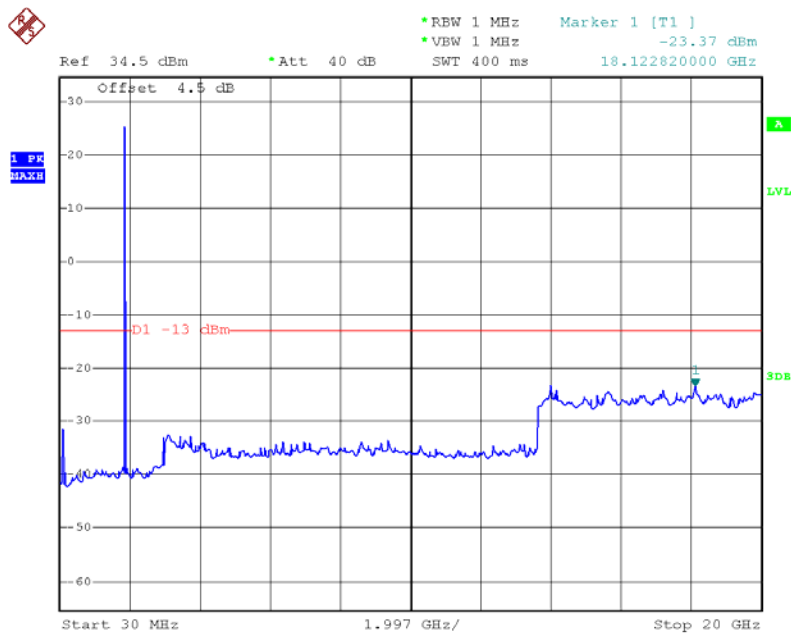


Date: 1.DEC.2010 17:41:17



EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH 600		

Conducted Spurious of Configuration 1xEVDO REV A channel 600

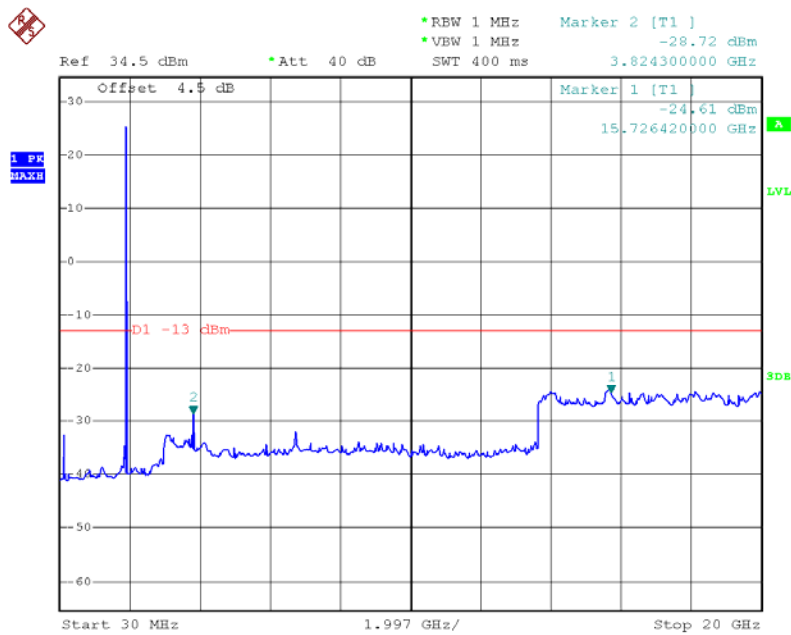


Date: 1.DEC.2010 17:51:48



EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH 1175		

**Conducted Spurious of Configuration 1xEVDO REV A channel 1175**



Date: 1.DEC.2010 18:05:00



#### **4.4 SPURIOUS RADIATED EMISSIONS MEASUREMENT**

##### **4.4.1 LIMIT**

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 limit translates in the relevant power range (1 to 0.001W). At 1W(Power Control Level 0) the specified minimum attenuation becomes 43dB and the limit of emission equal to  $-13\text{dBm}$ . At 0.001W(Power Control Level 15) the specified minimum attenuation becomes 13dB and the emission of limit equal to  $-13\text{dBm}$ . So the limit of emission is the same absolute specified line.

##### **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.

<b>Spectrum Parameters</b>	<b>Setting</b>
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

##### **4.4.3 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.





#### **4.4.4 TEST SETUP LAYOUT**

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

#### **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.



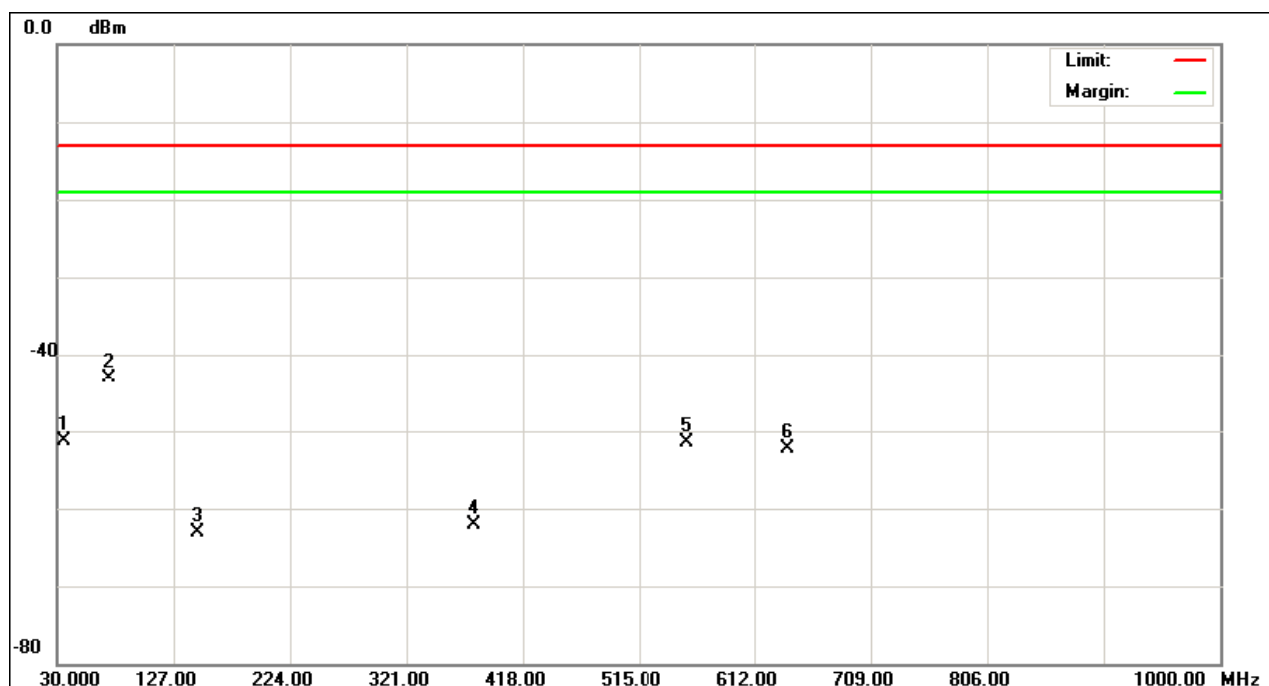
#### 4.4.7 RESULTS OF TRANSMITTER SPURIOUS EMISSIONS BELOW 1GHZ

EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH25 for Taffic /1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
34.80	V	X	TX	-51.34	-13.00	-38.34	
71.60	V	X	TX	-43.12	-13.00	-30.12	
145.20	V	X	TX	-63.09	-13.00	-50.09	
375.60	V	X	TX	-62.15	-13.00	-49.15	
555.70	V	X	TX	-51.56	-13.00	-38.56	
638.90	V	X	TX	-52.34	-13.00	-39.34	

#### 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 30MHz to 1000MHz ◦
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ◦



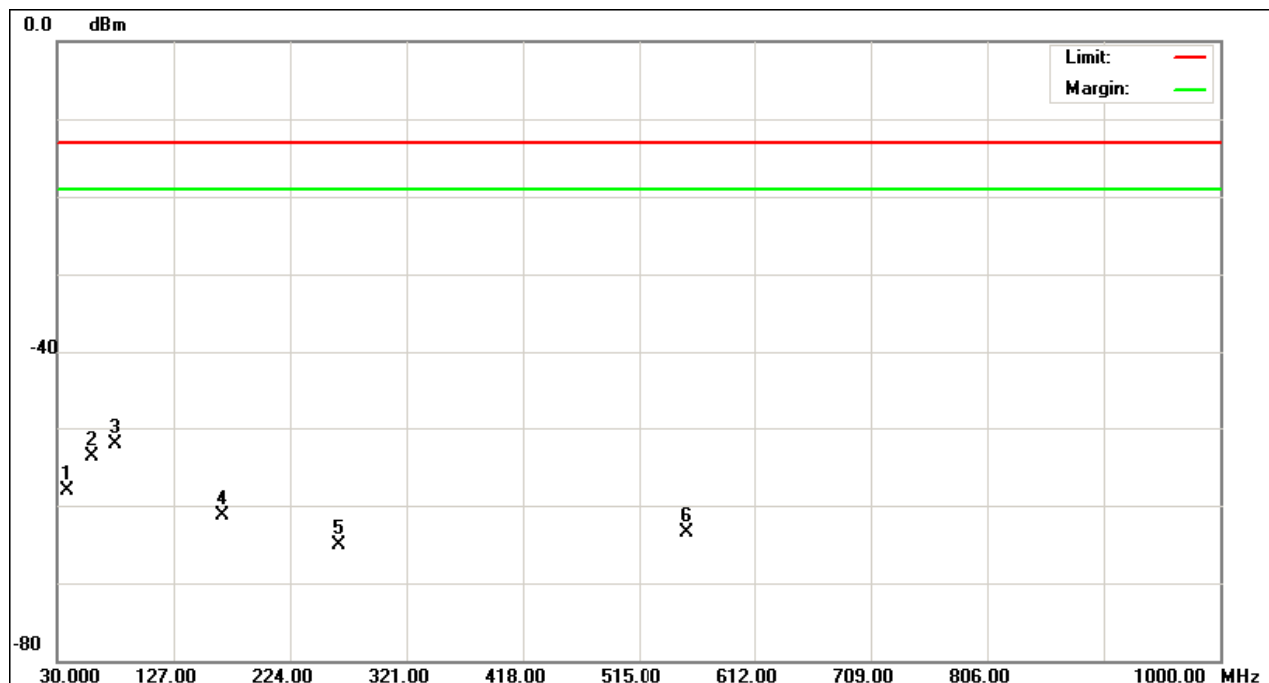


EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH25 for Taffic /1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS)	Limits	Margins	Note
36.80	H	X	TX	-58.16	-13.00	-45.16	
58.10	H	X	TX	-53.60	-13.00	-40.60	
77.40	H	X	TX	-52.02	-13.00	-39.02	
166.50	H	X	TX	-61.23	-13.00	-48.23	
263.30	H	X	TX	-65.17	-13.00	-52.17	
555.70	H	X	TX	-63.43	-13.00	-50.43	

**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 ◦



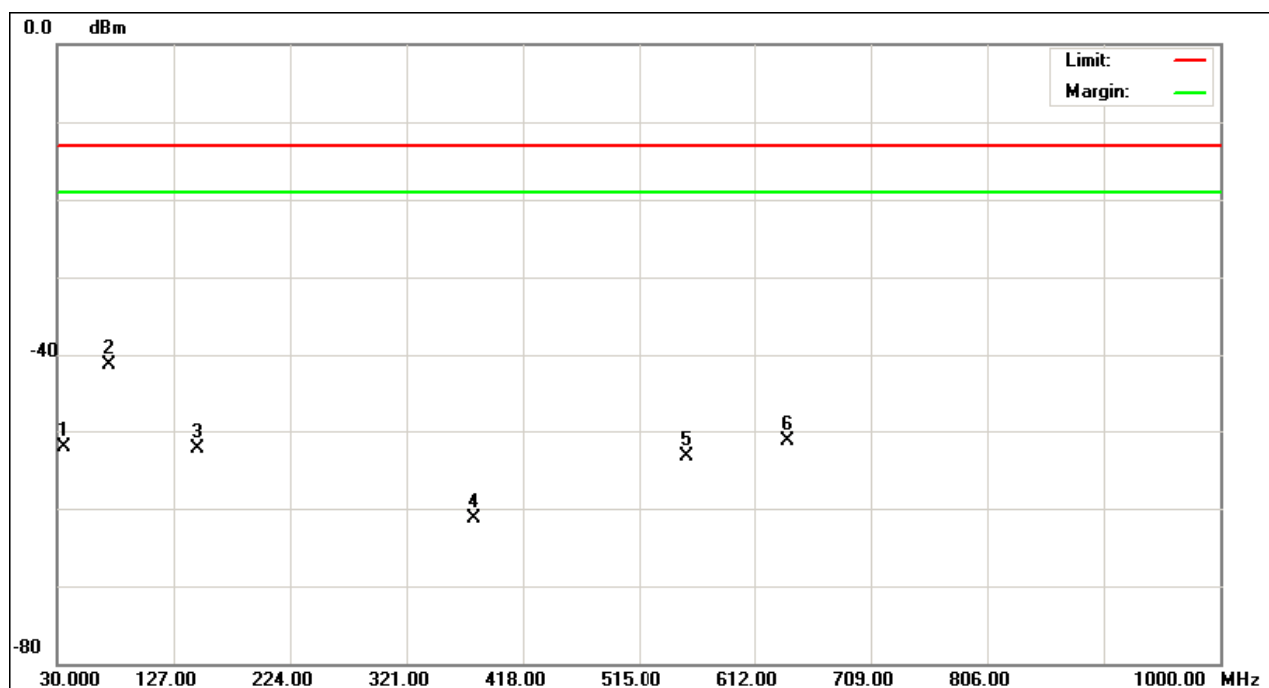


EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH600 for Taffic /1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
34.80	V	X	TX	-52.12	-13.00	-39.12	
71.60	V	X	TX	-41.33	-13.00	-28.33	
145.20	V	X	TX	-52.32	-13.00	-39.32	
375.60	V	X	TX	-61.24	-13.00	-48.24	
555.70	V	X	TX	-53.33	-13.00	-40.33	
638.90	V	X	TX	-51.23	-13.00	-38.23	

**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 ◦



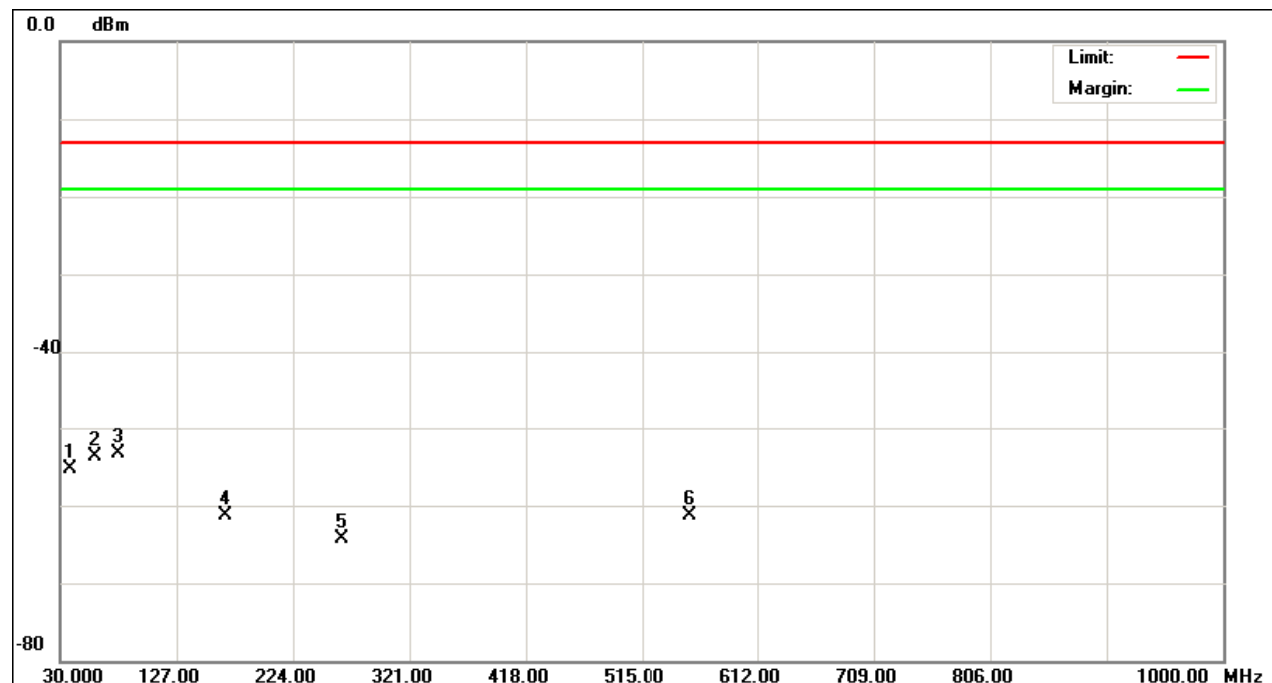


EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH600 for Taffic /1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS)	Limits	Margins	Note
36.80	H	X	TX	-55.26	-13.00	-42.26	
58.10	H	X	TX	-53.60	-13.00	-40.60	
77.40	H	X	TX	-53.34	-13.00	-40.34	
166.50	H	X	TX	-61.32	-13.00	-48.32	
263.30	H	X	TX	-64.32	-13.00	-51.32	
555.70	H	X	TX	-61.24	-13.00	-48.24	

**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 ◦



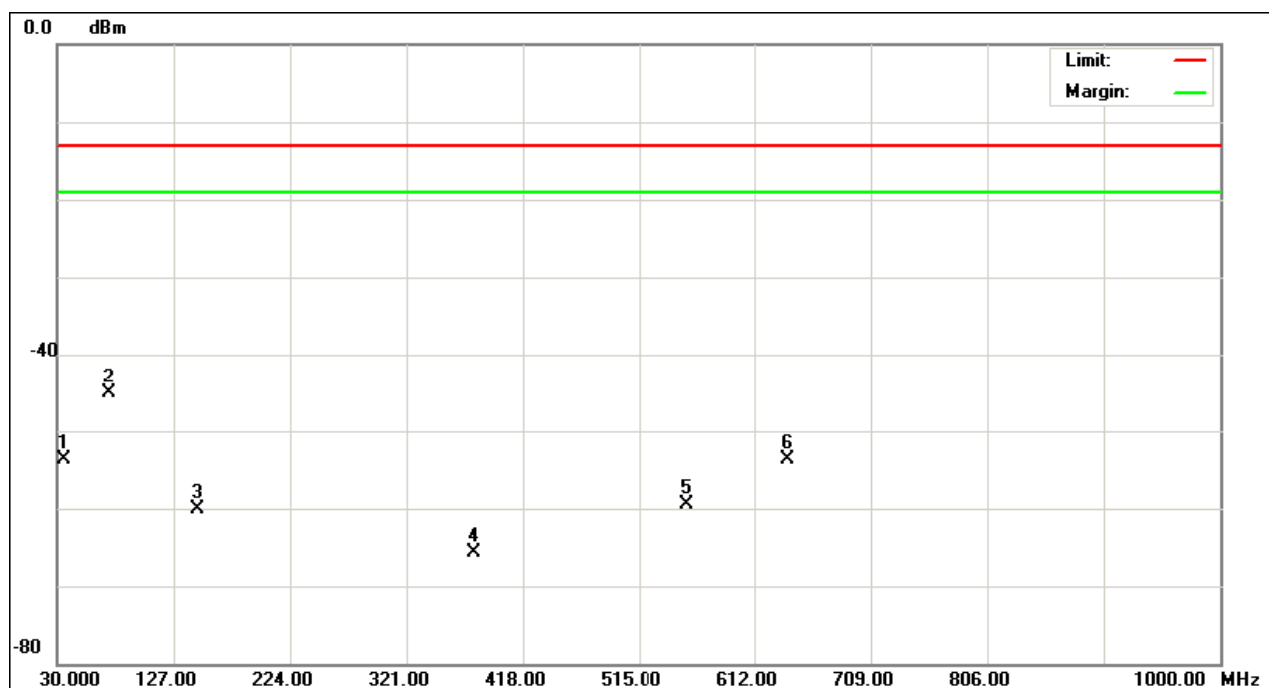


EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH1175 for Taffic /1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
34.80	V	X	TX	-53.69	-13.00	-40.69	
71.60	V	X	TX	-45.00	-13.00	-32.00	
145.20	V	X	TX	-60.09	-13.00	-47.09	
375.60	V	X	TX	-65.65	-13.00	-52.65	
555.70	V	X	TX	-59.56	-13.00	-46.56	
638.90	V	X	TX	-53.74	-13.00	-40.74	

**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 :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH1175 for Taffic /1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS)	Limits	Margins	Note
36.80	H	X	TX	-59.26	-13.00	-46.26	
58.10	H	X	TX	-50.60	-13.00	-37.60	
77.40	H	X	TX	-53.02	-13.00	-40.02	
166.50	H	X	TX	-60.83	-13.00	-47.83	
263.30	H	X	TX	-68.27	-13.00	-55.27	
555.70	H	X	TX	-62.32	-13.00	-49.32	

**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 ◦





#### 4.4.8 RESULTS OF TRANSMITTER SPURIOUS EMISSIONS ABOVE 1GHZ

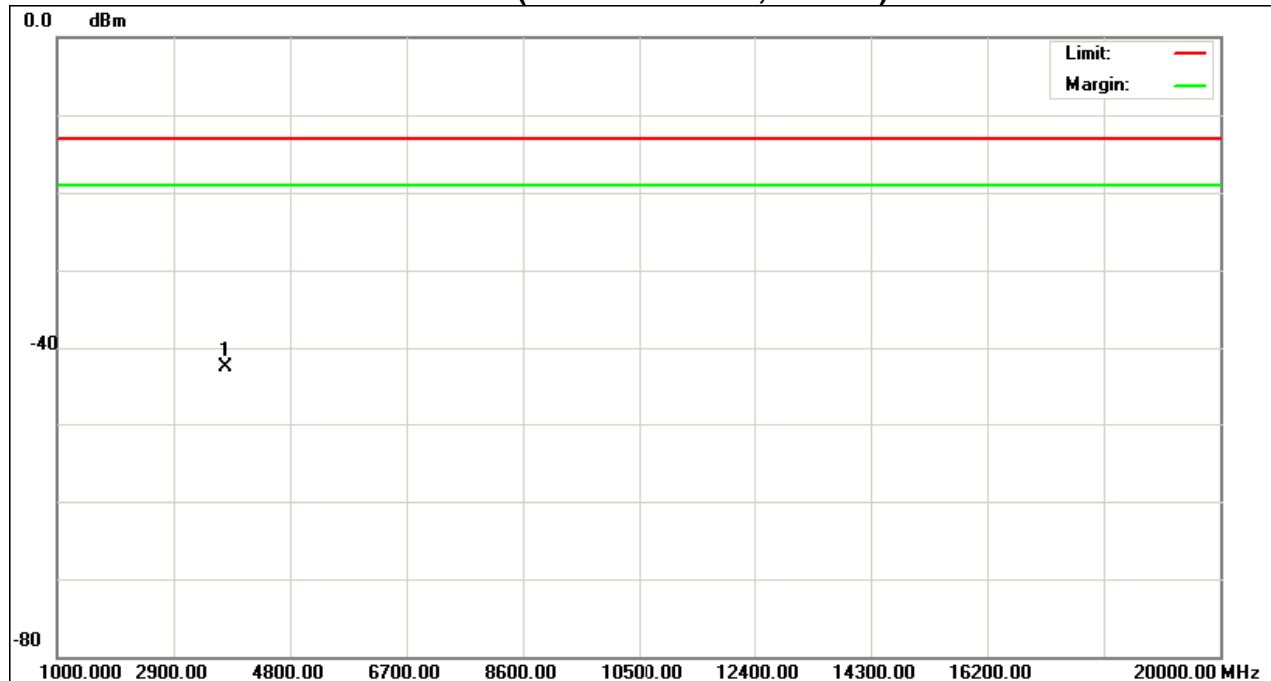
EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH25 Taffic/1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
3700.00	V	X	TX	-42.58	-13.00	-29.58	

**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 ◦

#### TX CH25(Above 1000 MHz, Vertical)







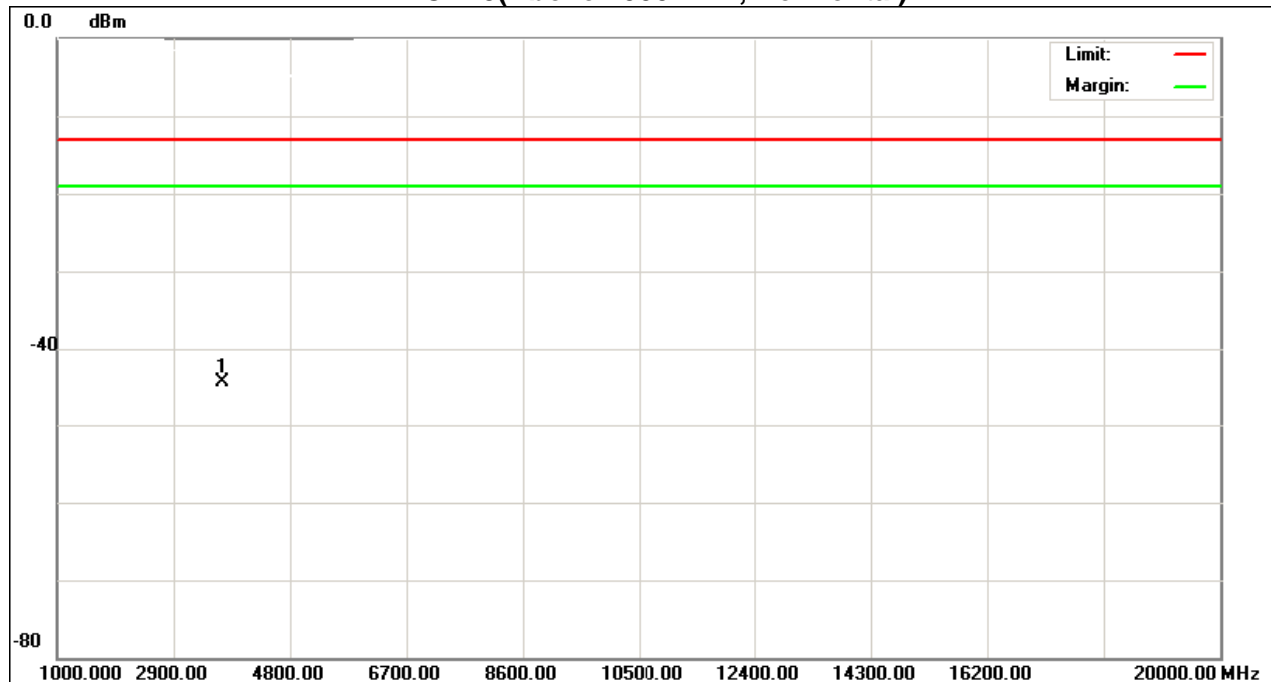
EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH25 Taffic/1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
3700.00	H	X	TX	-44.51	-13.00	-31.51	

**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 ◦

**TX CH25(Above 1000 MHz, Horizontal)**





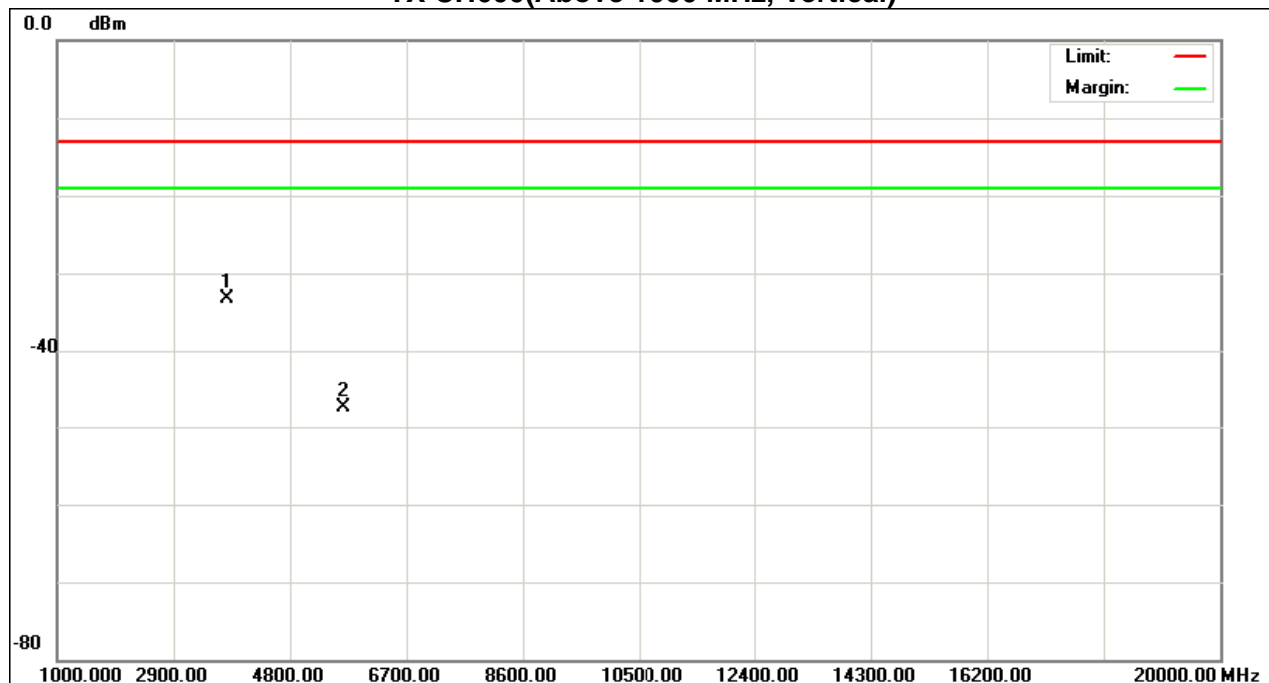
EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH600 Taffic/1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
3759.00	V	X	TX	-33.20	-13.00	-20.20	
5646.00	V	X	TX	-47.45	-13.00	-34.45	

**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 ◦

**TX CH600(Above 1000 MHz, Vertical)**





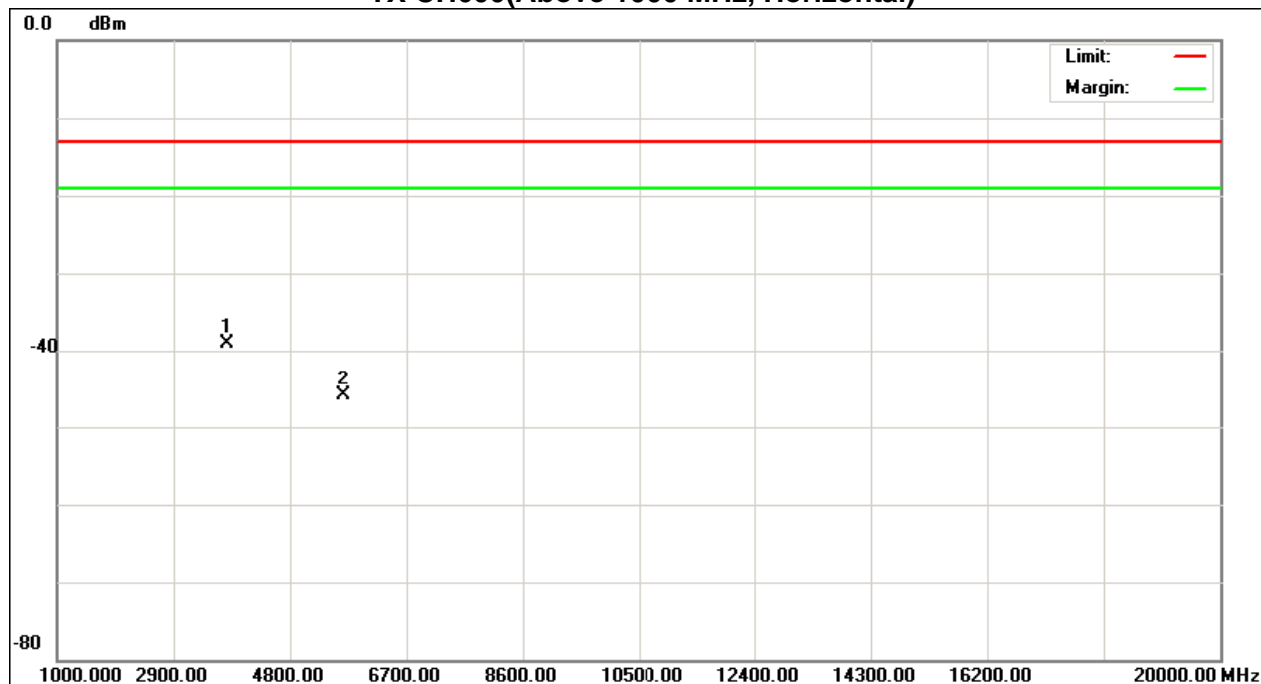
EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH600 Taffic/1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
3759.00	H	X	TX	-39.02	-13.00	-26.02	
5646.00	H	X	TX	-45.92	-13.00	-32.92	

**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 ◦

**TX CH600(Above 1000 MHz, Horizontal)**





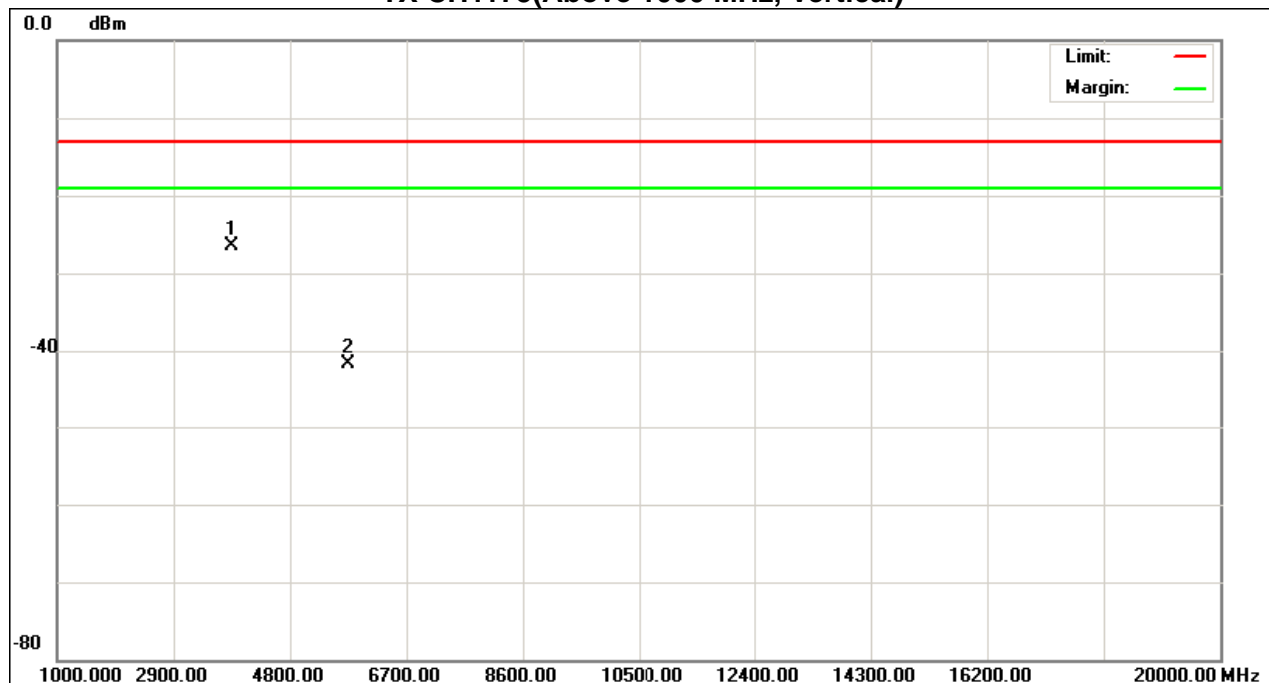
EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH1175 Taffic/1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
3819.00	V	X	TX	-26.43	-13.00	-13.43	
5726.00	V	X	TX	-41.79	-13.00	-28.79	

**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 ◦

**TX CH1175(Above 1000 MHz, Vertical)**





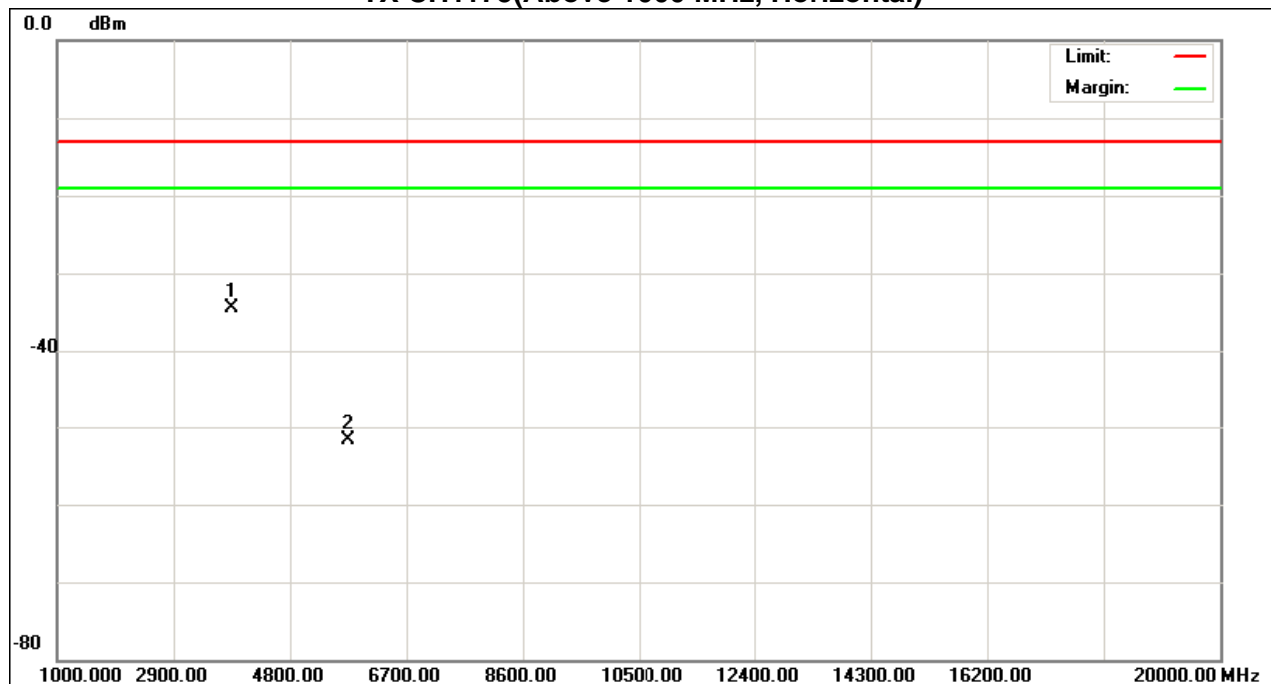
EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH1175 Taffic/1xEVDO REV A		

Frequency (MHz)	Ant H / V	EUT Axis (X/Y/Z)	TX/RX	Measure d(FS) (dBm)	Limits (dBm)	Margins	Note
3819.00	H	X	TX	-34.42	-13.00	-21.42	
5726.00	H	X	TX	-51.64	-13.00	-38.64	

**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 ◦

**TX CH1175(Above 1000 MHz, Horizontal)**





## **4.5 BAND EDGE MEASUREMENT**

### **4.5.1 LIMIT**

The PCS frequency bands refer to the FCC 24.229 rule. According to FCC 24.238(b) 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. Then we measure that the bandwidth is about 300kHz and the resolution bandwidth is 3kHz.

### **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.

<b>Spectrum Parameters</b>	<b>Setting</b>
Attenuation	Auto
Span Frequency	5 MHz
RB / VB	10 kHz /30 kHz
Trace	Sample
Sweep Time	Auto

### **4.5.3 TEST PROCEDURES**

1. The EUT was set up for the maximum peak power with 1xEVDO REV A link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels, 25 and 1175(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 5 MHz. RB of the spectrum is 10kHz and VB of the spectrum is 30KHz.
4. Record the Sample trace plot into the test report.

### **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.

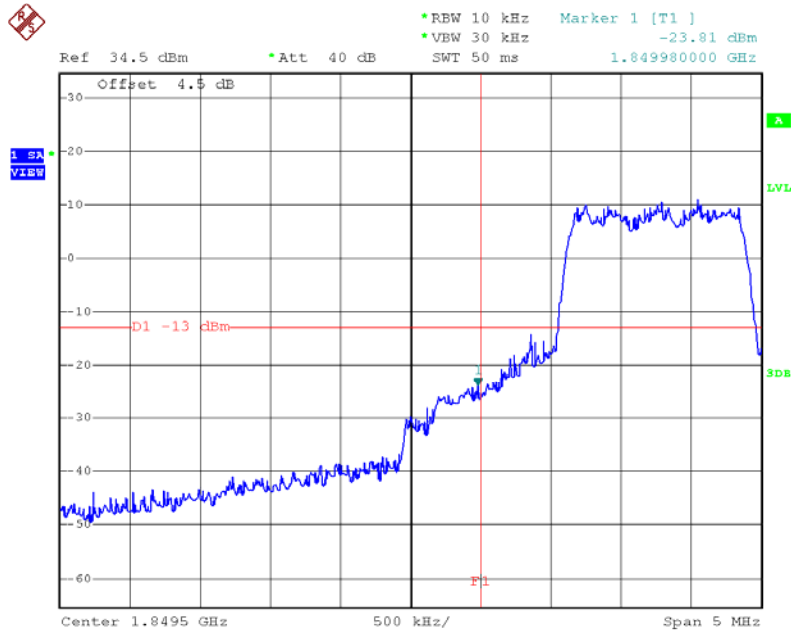
### **4.5.6 EUT OPERATION DURING TEST**

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



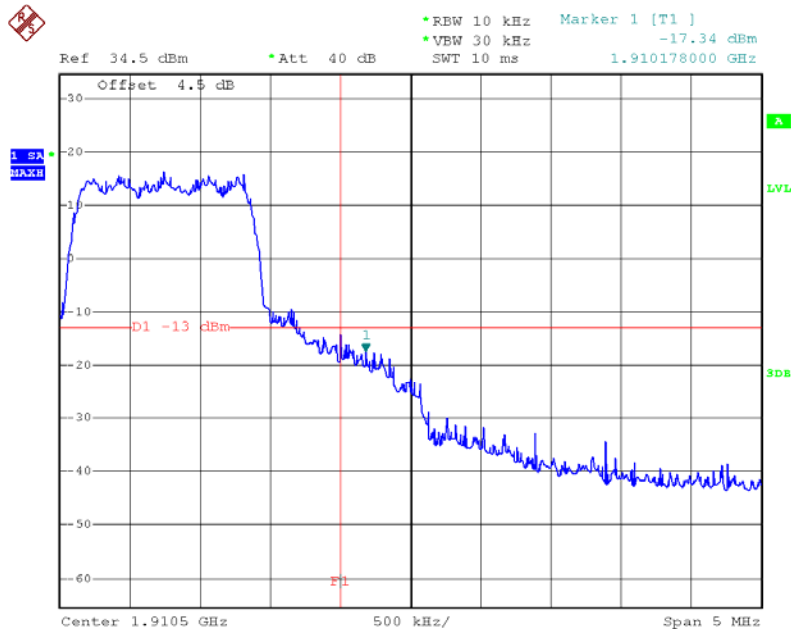
#### 4.5.7 TEST RESULTS OF BAND EDGE

##### Band Edge on Configuration 1xEVDO REV A / Channel 25-CONDUCTED MODE



Date: 1.DEC.2010 17:48:50

##### Band Edge on Configuration 1xEVDO REV A / Channel 1175CONDUCTED MODE



Date: 1.DEC.2010 18:03:31

## 4.6 FREQUENCY STABILITY MEASUREMENT

### 4.6.1 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 0.1 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)  $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ .

### 4.6.2 MEASURING INSTRUMENTS AND SETTING

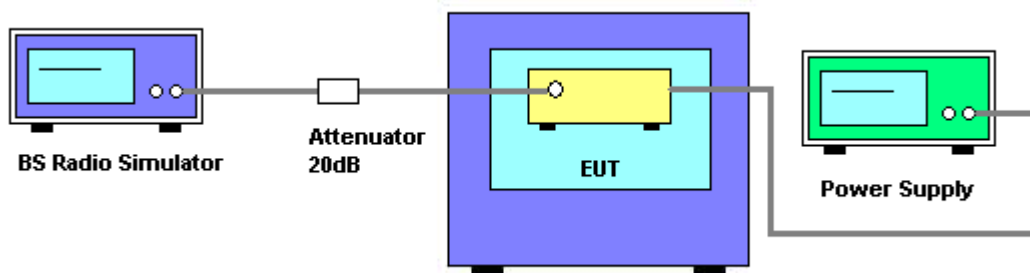
Please refer to section 5 in this report. The following table is the setting of the BS Simulator.

Spectrum Parameters	Setting
Frequency Error	The maximum of transmit frequency error

### 4.6.3 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 3.1 Volts to 4.3 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  $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ .

### 4.6.4 TEST SETUP LAYOUT



### 4.6.5 TEST DEVIATION

There is no deviation with the original standard.

### 4.6.6 EUT OPERATION DURING TEST

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





#### 4.6.7 RESULTS OF FREQUENCY STABILITY

EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX CH 600 (PCS Band)		

##### Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.1	17	0.009042553	0.1
3.2	17	0.009042553	0.1
3.3	16	0.008510638	0.1
3.4	14	0.007446809	0.1
3.5	13	0.006914894	0.1
3.6	15	0.007978723	0.1
3.7	10	0.005319149	0.1
3.8	13	0.006914894	0.1
3.9	17	0.009042553	0.1
4	20	0.010638298	0.1
4.1	22	0.011702128	0.1
4.2	23	0.012234043	0.1
4.3	26	0.013829787	0.1
Max. Deviation (ppm)	<b>26</b>	<b>0.013829787</b>	<b>0.1</b>

##### Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
<b>50</b>	<b>17</b>	0.009042553	<b>0.1</b>
40	16	0.008510638	0.1
30	14	0.007446809	0.1
20	11	0.005851064	0.1
10	15	0.007978723	0.1
0	14	0.007446809	0.1
-10	16	0.008510638	0.1
-20	12	0.006382979	0.1
-30	18	0.009574468	0.1
Max. Deviation (ppm)	<b>18</b>	<b>0.009574468</b>	<b>0.1</b>

#### 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. 22, 2011
2	LISN	EMCO	3816/2	00042990	Jan. 22, 2011
3	Pulse Limiter	Electro-Metrics	EM-7600	112644	Nov. 25, 2011
4	50Ω Terminator	N/A	N/A	N/A	May.11, 2011
5	Test Cable	N/A	C01	N/A	Nov. 25, 2011
6	EMI Test Receiver	R&S	ESCI	100082	Mar. 06, 2011

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

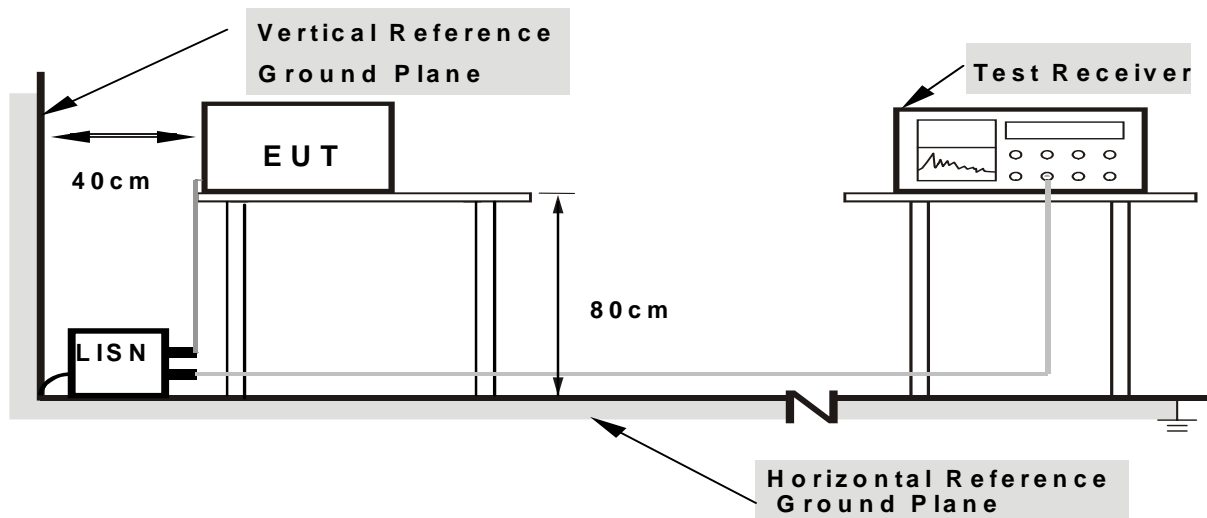
#### 4.8.3 TEST PROCEDURE

- The EUT was placed 0.8 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- 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 cm 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.



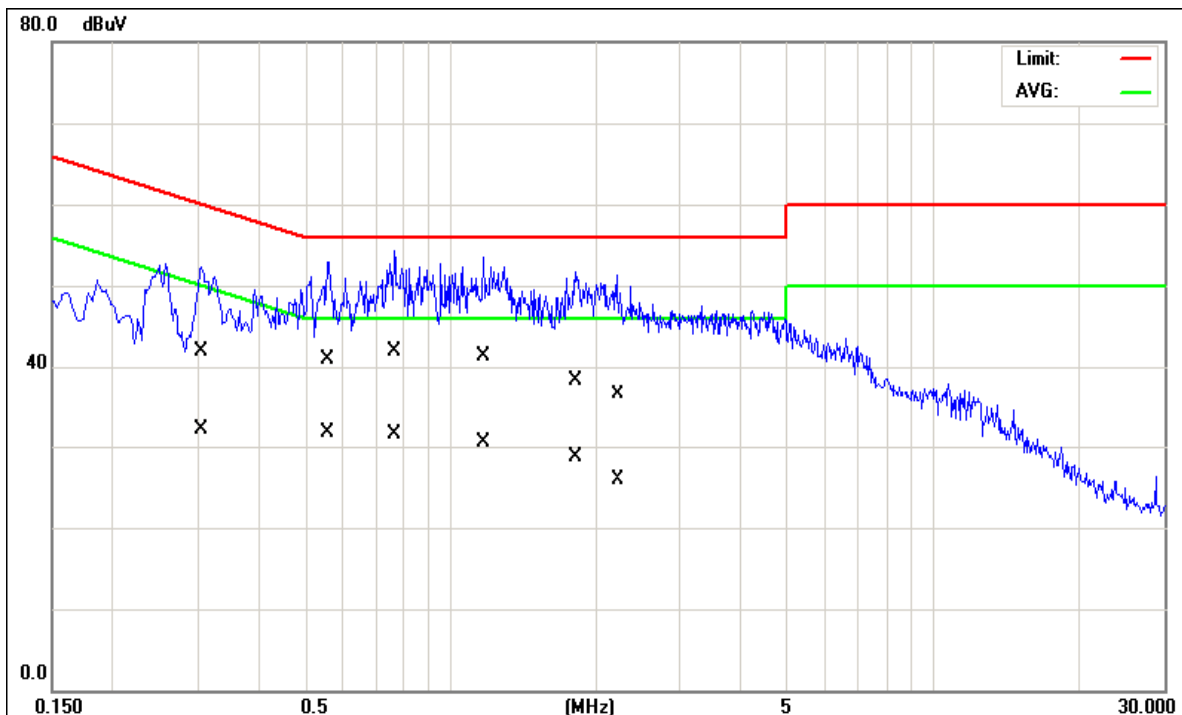
#### 4.8.7 TEST RESULTS

EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1008hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 1 - 1xEVDO REV A Mode		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.31	Line	41.99	32.20	60.08	50.08	-17.88	(AV)
0.56	Line	40.94	31.80	56.00	46.00	-14.20	(AV)
0.77	Line	41.83	31.50	56.00	46.00	-14.17	(QP)
1.17	Line	41.39	30.44	56.00	46.00	-14.61	(QP)
1.81	Line	38.29	28.62	56.00	46.00	-17.38	(AV)
2.21	Line	32.46	25.98	56.00	46.00	-20.02	(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.



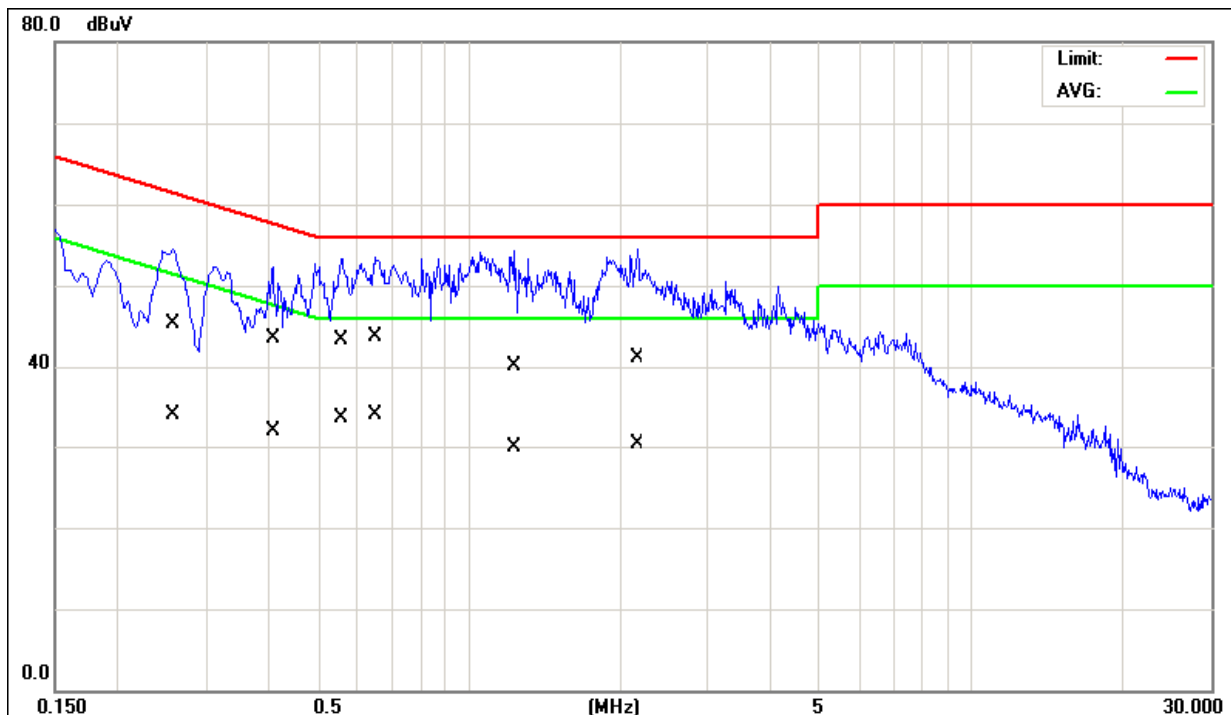


EUT :	PCA,EVDO MINI-PCI EXPRESS CARD CDMA MODEM	Model Name. :	MC5728V
Temperature :	23 °C	Relative Humidity :	51 %
Pressure :	1008hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 1 - 1xEVDO REV A Mode		

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Margin (dB)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.26	Neutral	45.35	33.90	61.50	51.50	-16.15	(AV)
0.41	Neutral	43.54	31.98	57.73	47.73	-14.19	(QP)
0.56	Neutral	43.39	33.57	56.00	46.00	-12.43	(AV)
0.65	Neutral	43.80	33.91	56.00	46.00	-12.09	(AV)
1.23	Neutral	40.01	29.87	56.00	46.00	-15.99	(QP)
2.17	Neutral	41.13	30.29	56.00	46.00	-14.87	(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.





**5. LIST OF MEASUREMENT EQUIPMENTS**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2011
2	Signal Generator	R&S	SMR 40	3008A02274	May.26.2011
3	Signal Generator	HP	8648A	3636A02964	May.26.2011
4	Amplifier	Agilent	8447D	2944A11203	May.26.2011
5	Amplifier	Agilent	8449B	3008A02274	May.26.2011
6	Double Ridged Guide Antenna	ETS·LINDGREN	3115	00075846	May.27.2011
7	Antenna	SCHWARZBECK	VULB 9160	9160-3231	Jun .08.2011
8	Test Cable	N/A	CL-CB02-001	N/A	Dec.06.2011
9	Test Cable	N/A	CL-CB02-004	N/A	Dec.06.2011
10	Test Cable	N/A	CL-CB02-006	N/A	Dec.06.2011
11	Controller	CT	SC100	N/A	N/A
12	P-series Power meter	Agilent	N1911A	MY45100473	May.26.2011
13	Wireband Power sensor	Agilent	N1921A	MY45240824	May.26.2011
14	Wireless communications test	Agilent	5515C	MY48364183	Aug. 22, 2011
15	POWER SPLITTER	Mini-Circuits	ZN2PD-9G-S +	SF012700714	NCR
16	High pass Filter	Wainwright	WHK3.1/18G-10SS	24	May.26.2011
17	Band Reject Filter	Wainwright	WRCG1850/1910-1830/1930-60/12SS	38	May.26.2011
18	Band Reject Filter	Wainwright	WRCG824/849-810/863-60/9SS	14	May.26.2011
19	Temp. & Humid. Chamber	GIANT FORCE	ITH-225-20-S	IAB0309-001	Dec.06.2011
20	DC power supply	GW Instek	GPC-30300N	EK880675	Oct.18.2011