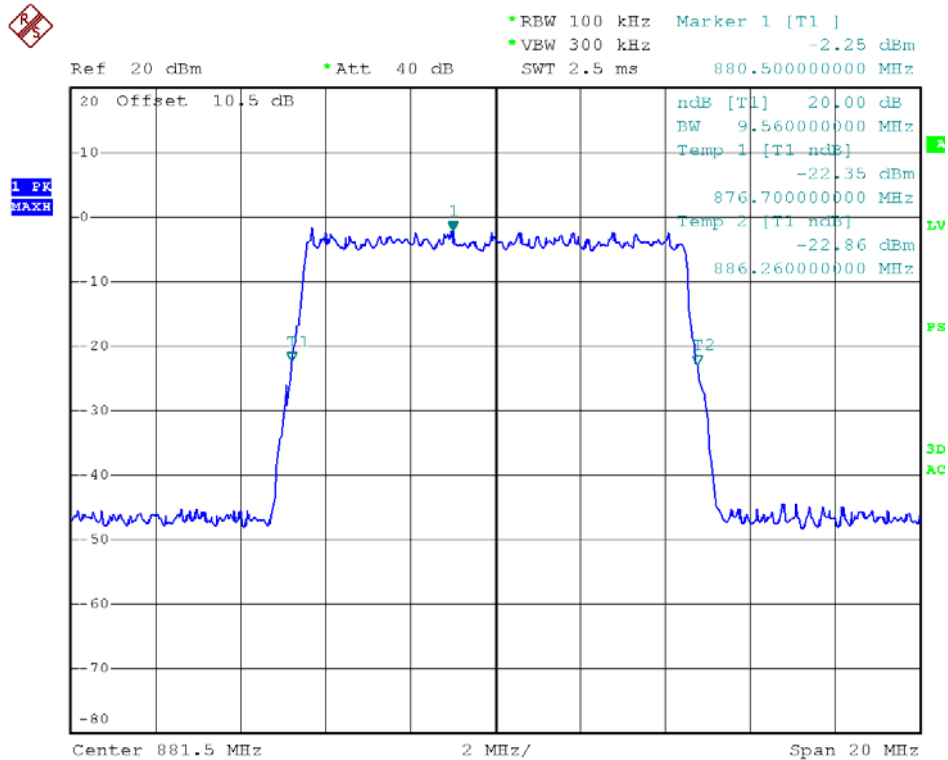
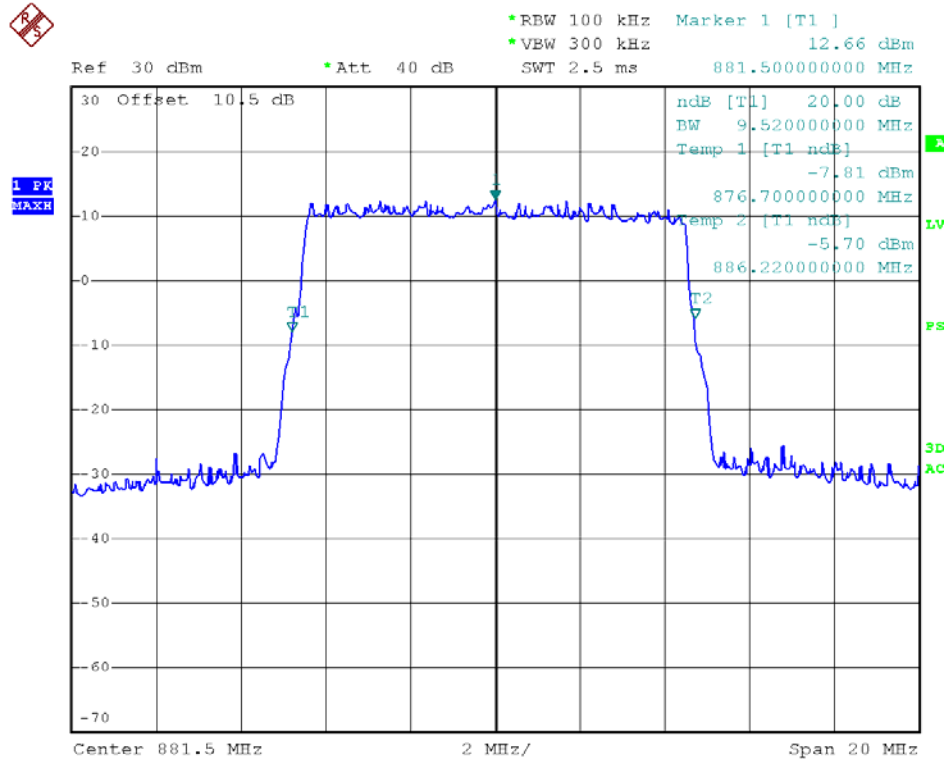


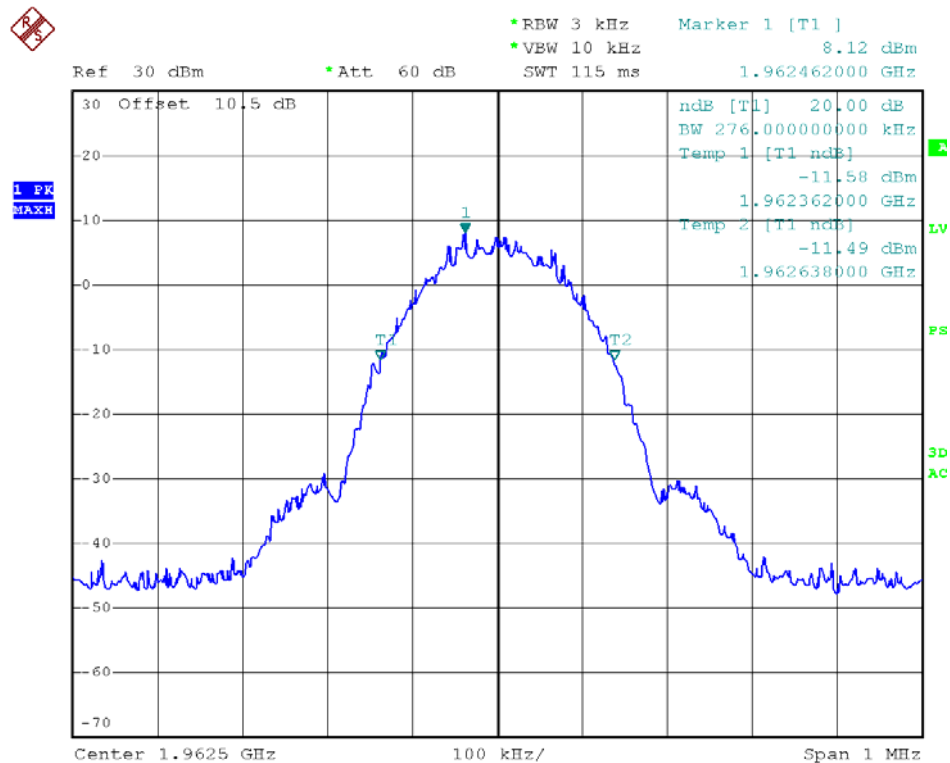
850MHz-LTE-10M downlink (middle frequency)-Input



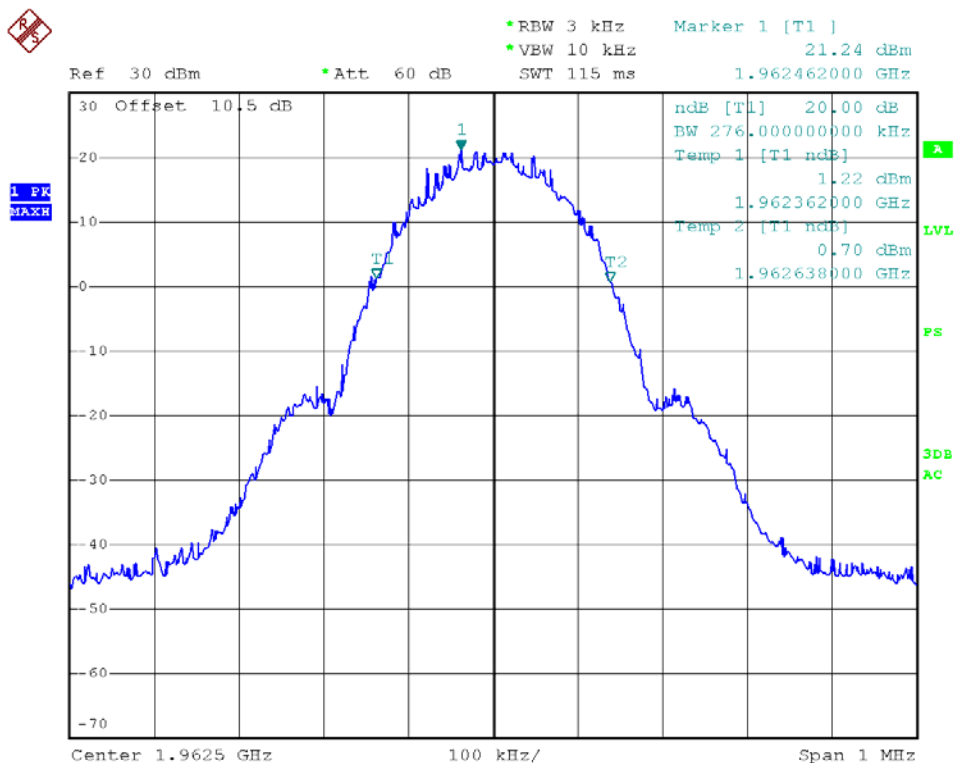
850MHz-LTE -10M downlink (middle frequency)- Output



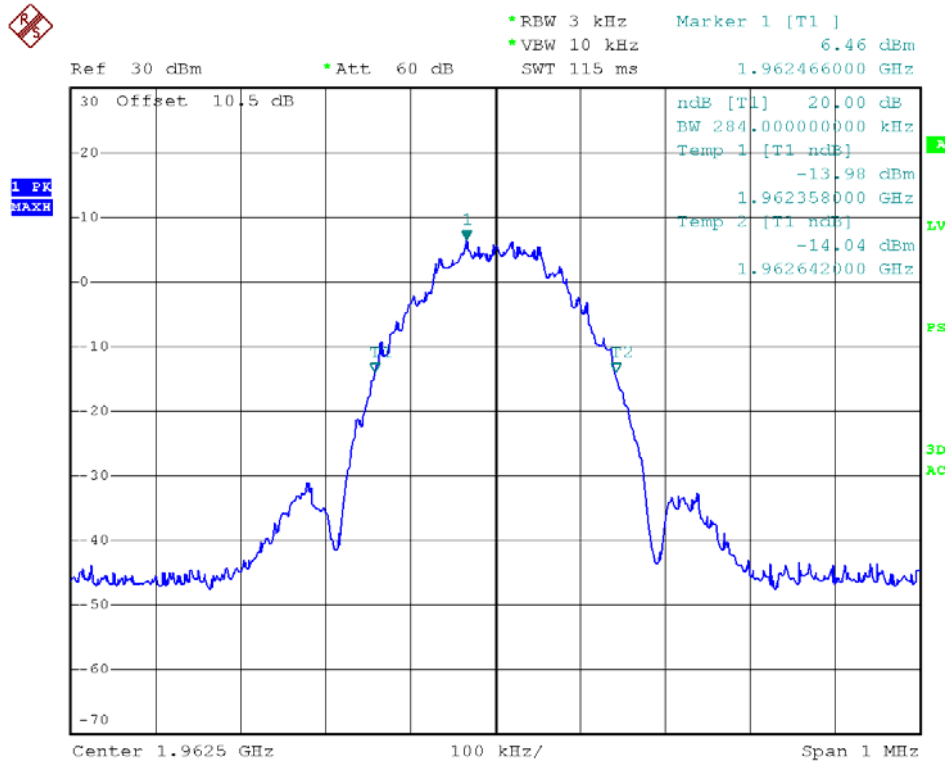
1900MHz-GSM downlink (middle frequency)-Input



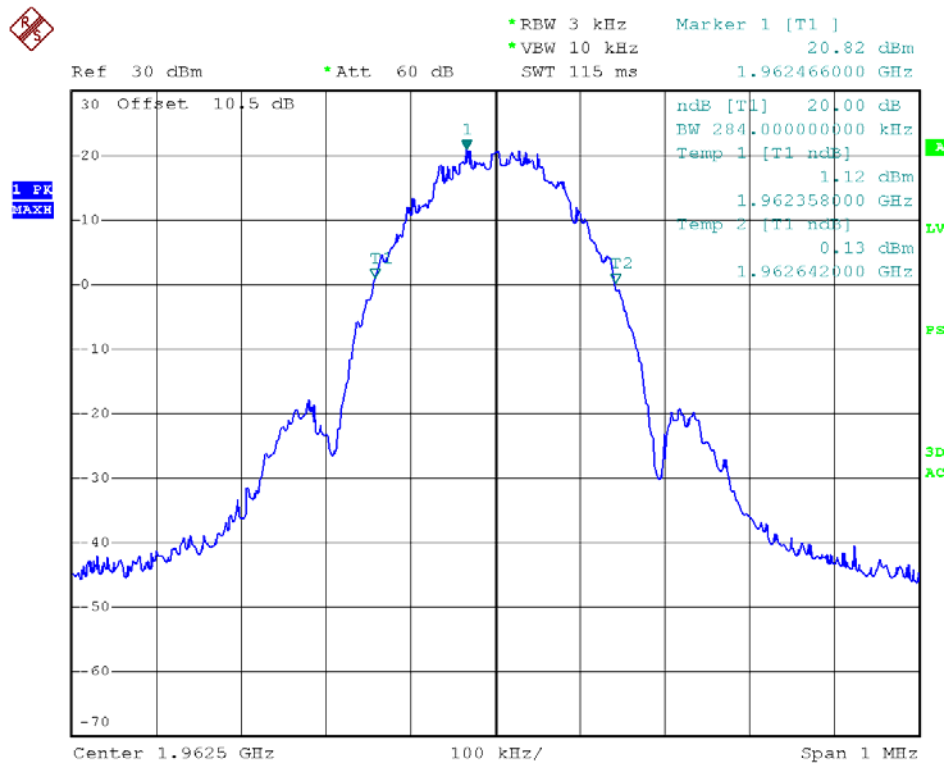
1900MHz-GSM downlink (middle frequency)- Output



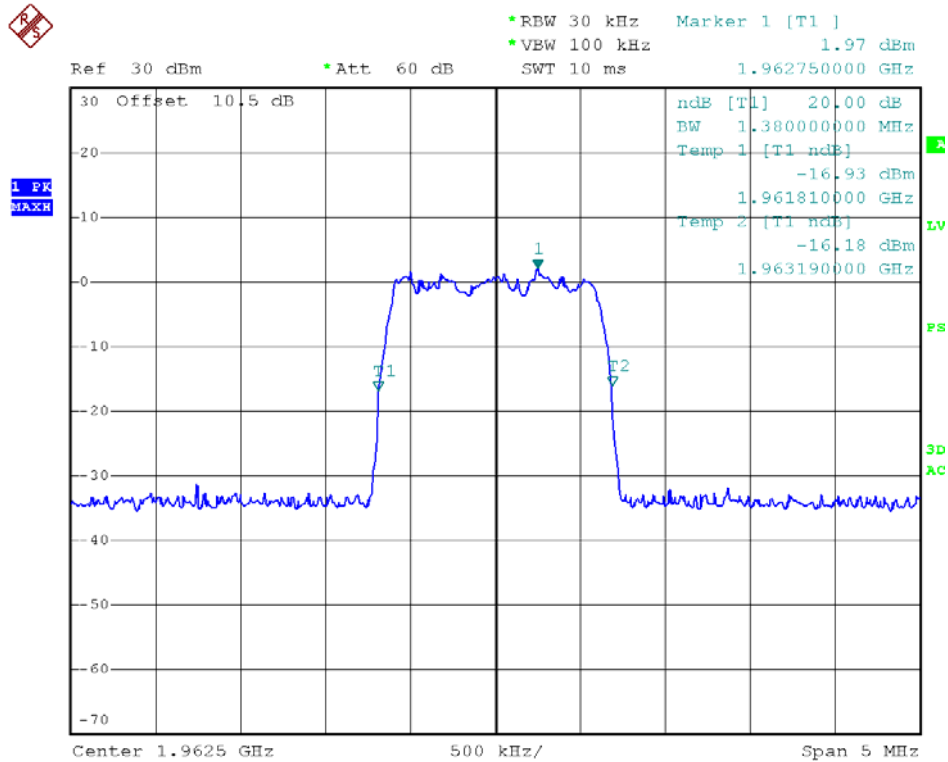
1900MHz-EDGE downlink (middle frequency)-Input



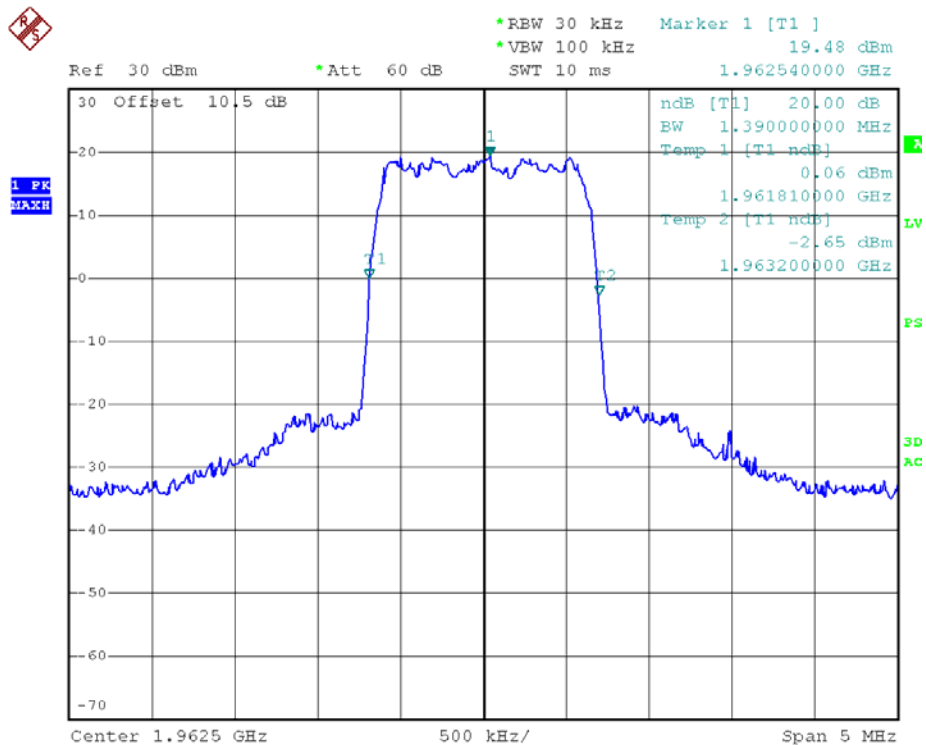
1900MHz-EDGE downlink (middle frequency)- Output



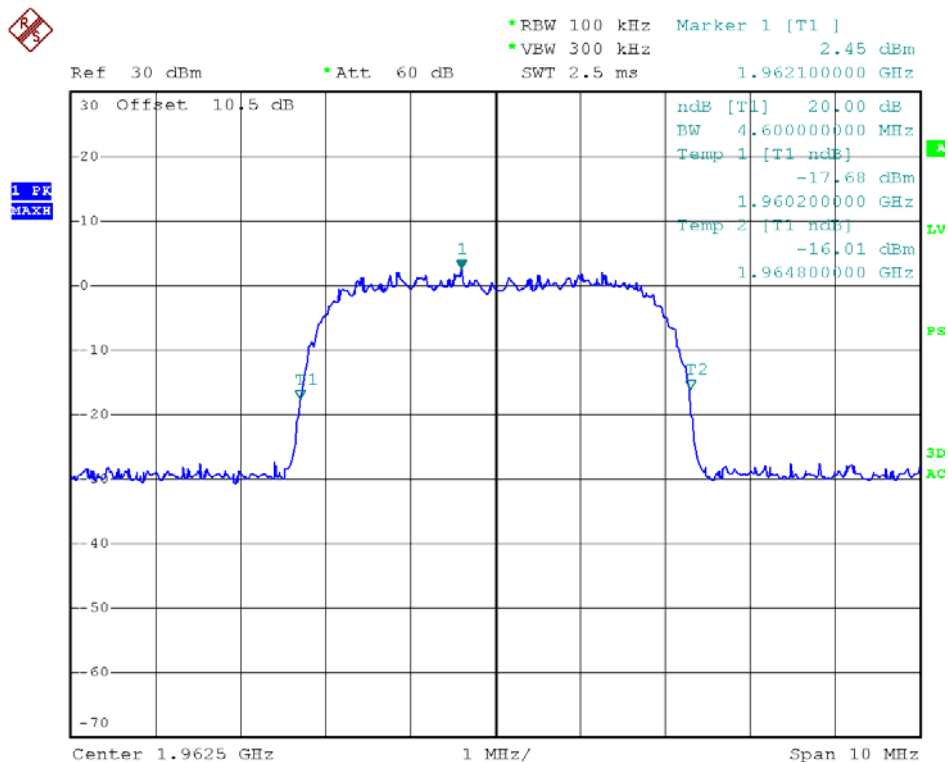
1900MHz-CDMA2000 downlink (middle frequency)-Input



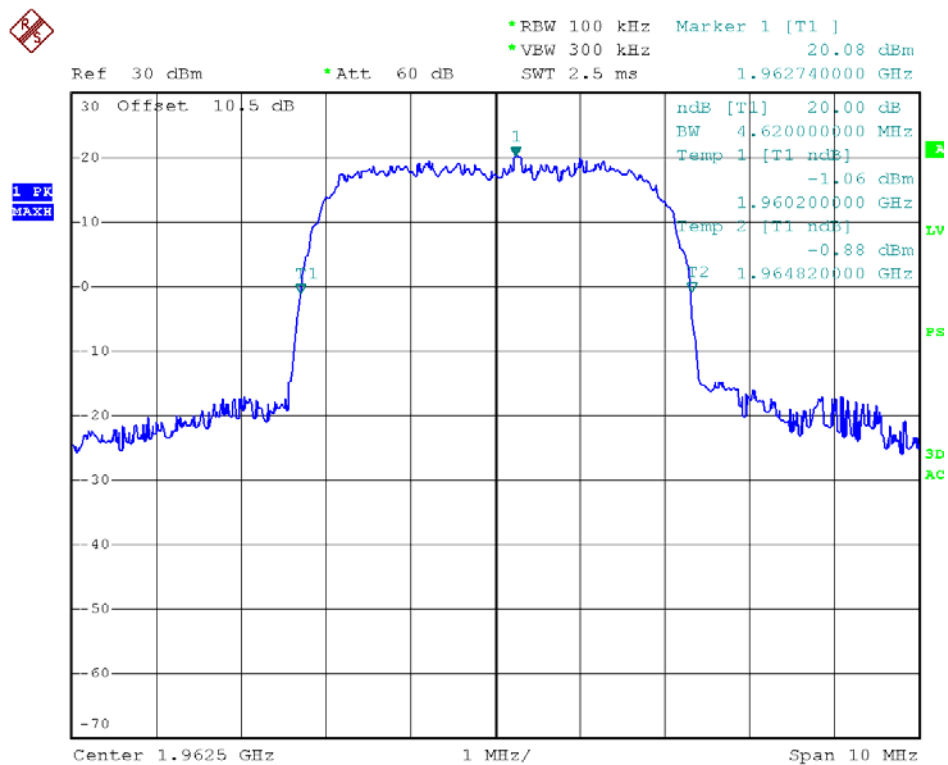
1900MHz-CDMA2000 downlink (middle frequency)- Output



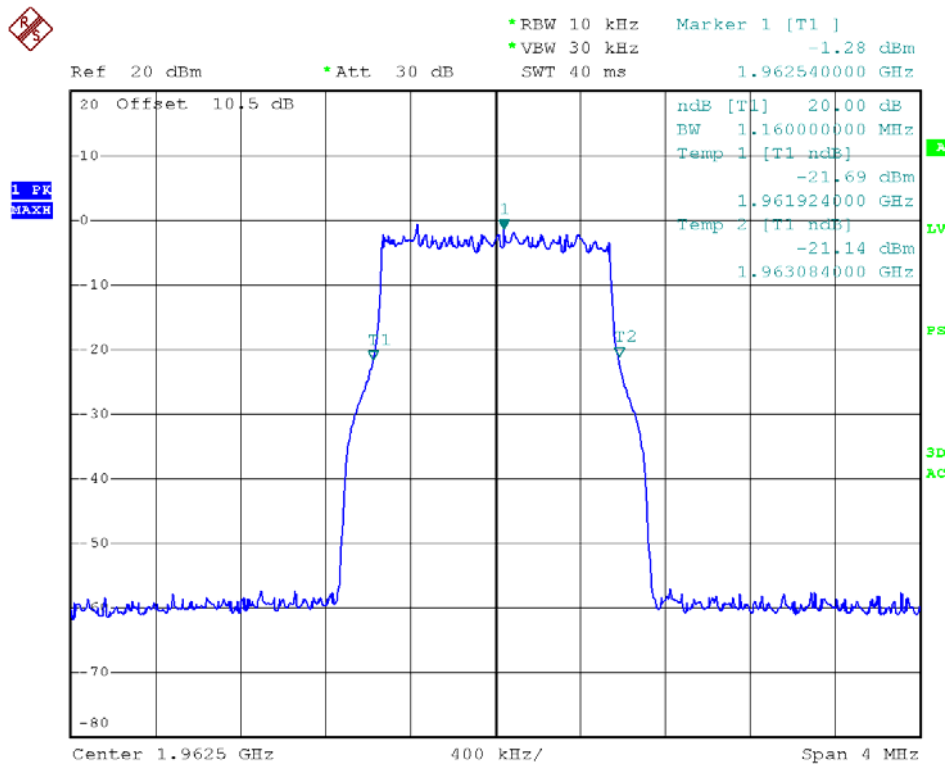
1900MHz-WCDMA downlink (middle frequency)-Input



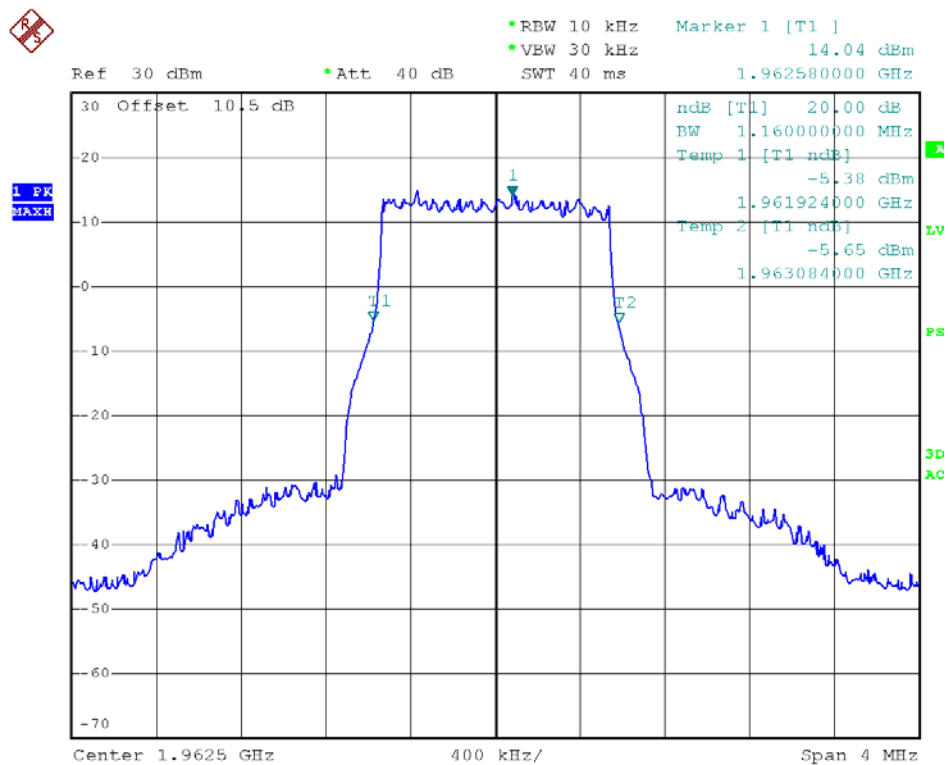
1900MHz-WCDMA downlink (middle frequency)- Output



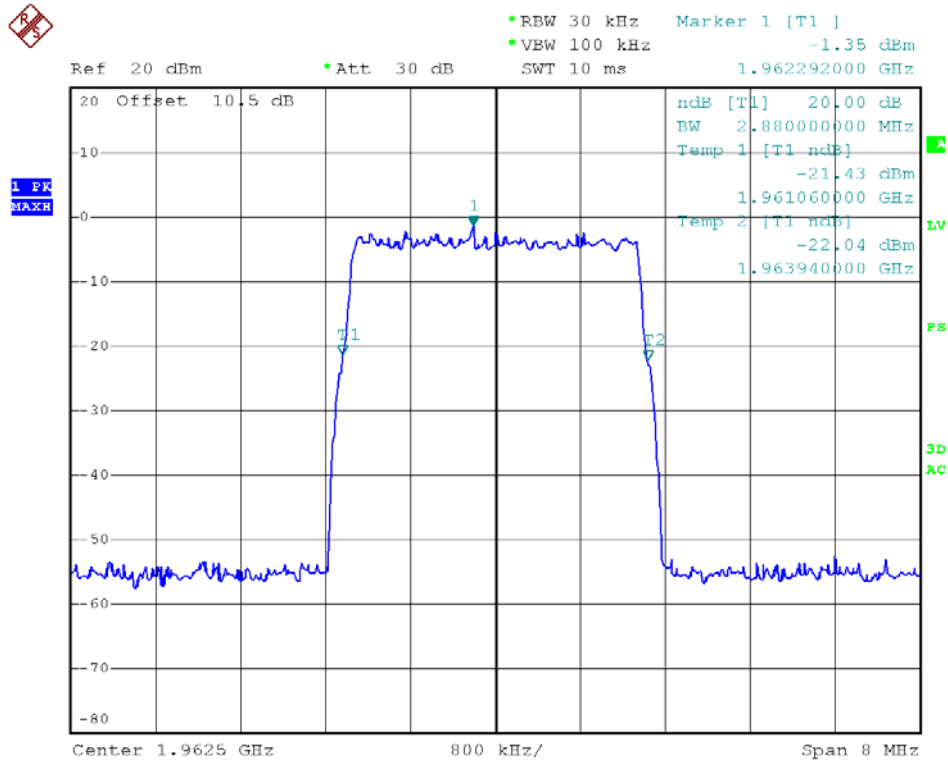
1900MHz-LTE-1.4M downlink (middle frequency)-Input



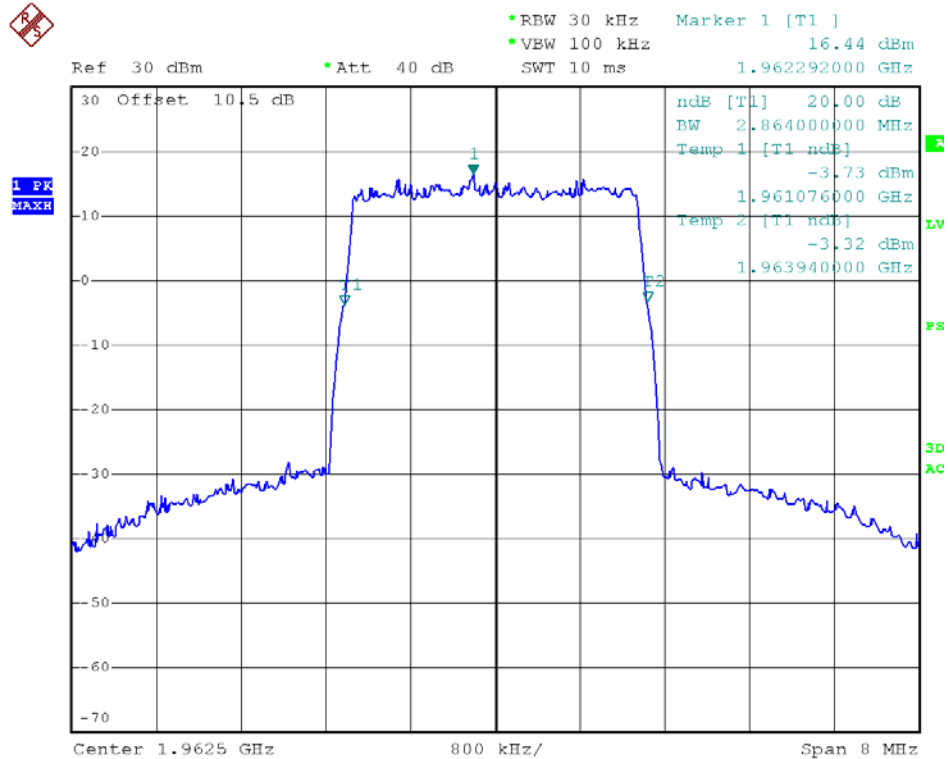
1900MHz-LTE -1.4M downlink (middle frequency)-Output



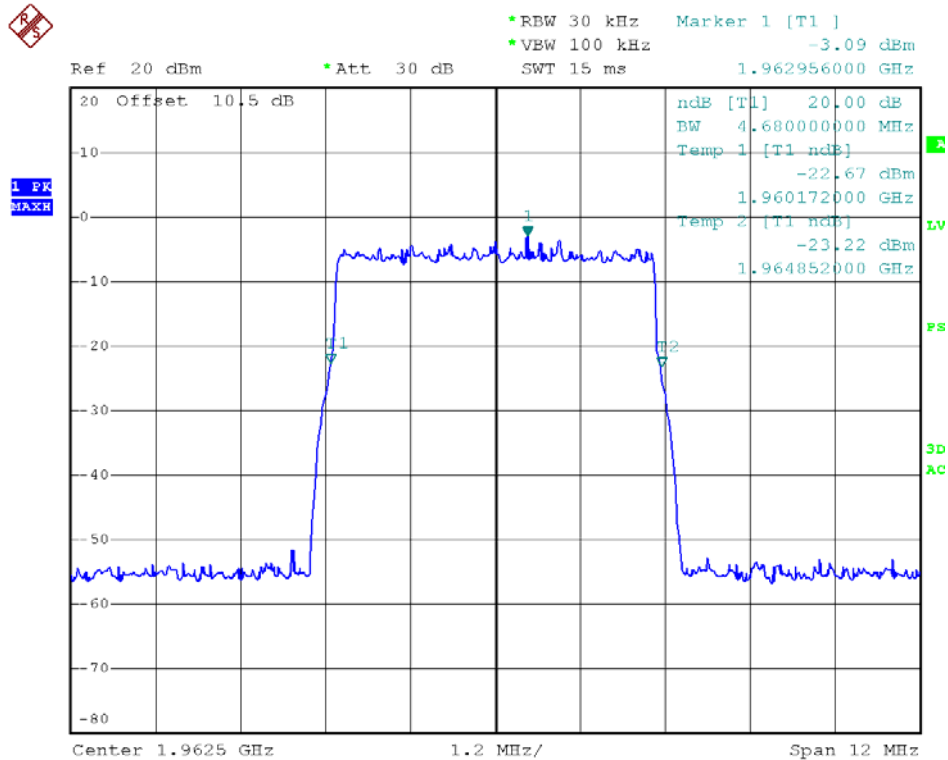
1900MHz-LTE-3M downlink (middle frequency)-Input



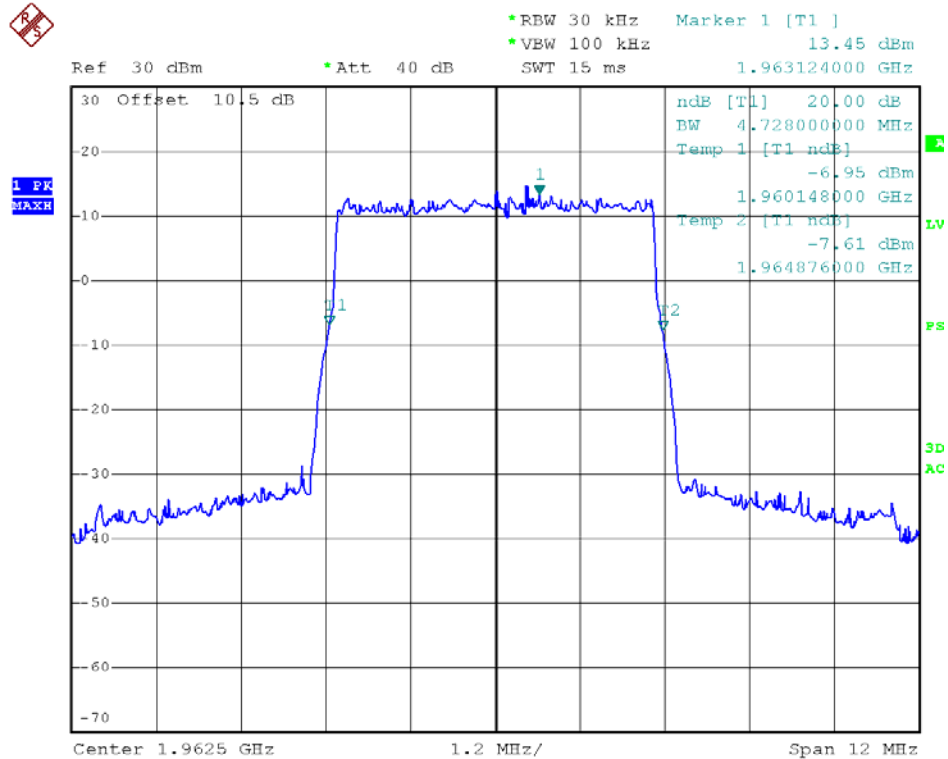
1900MHz-LTE-3M downlink (middle frequency)- Output



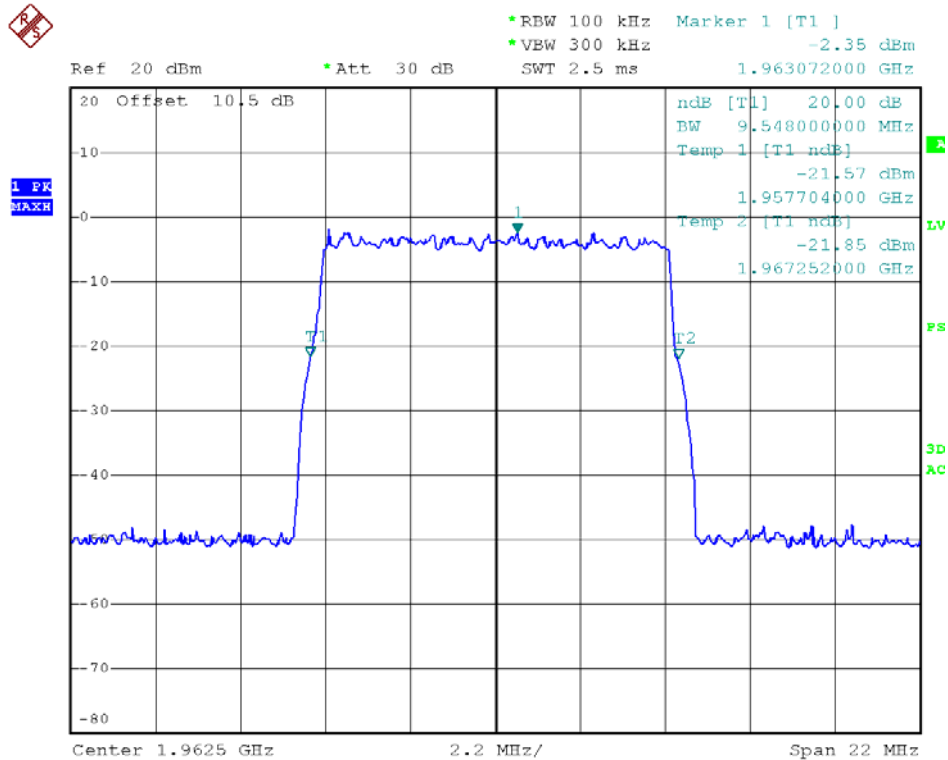
1900MHz-LTE-5M downlink (middle frequency)-Input



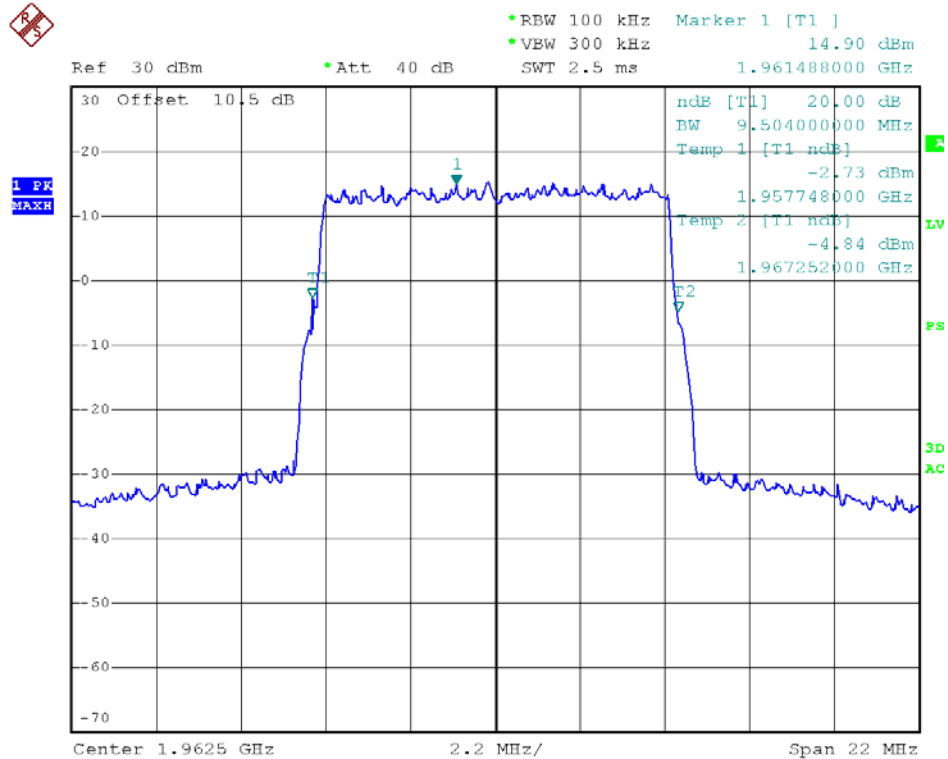
1900MHz-LTE-5M downlink (middle frequency)- Output



1900MHz-LTE-10M downlink (middle frequency)-Input



1900MHz-LTE-10M downlink (middle frequency)- Output



4.2.6 INTERMODULATION

Test Date: 28 December, 2012

Test Method: 2-11-04/EAB/RF

Test Requirement: FCC part 22.917(a)& FCC part 24.238(a) &FCC 27.53
22.917(a): The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.
24.238(a) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

EUT Operation:

Status The output power of EUT be set to maximum value,the gain of EUT be set to maximum value by software through the manufacture

Conditions Normal

Application 700MHz Downlink and Uplink ports

850MHz Downlink and Uplink ports

1900MHz Downlink and Uplink ports

Test configuration

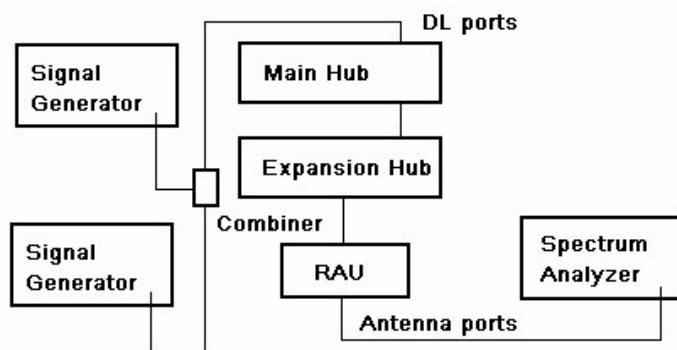


Fig.1 Down Link Intermodulation

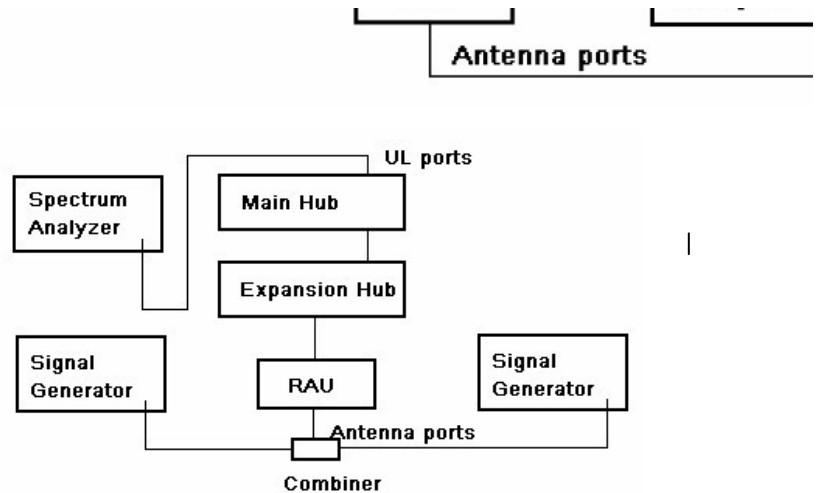
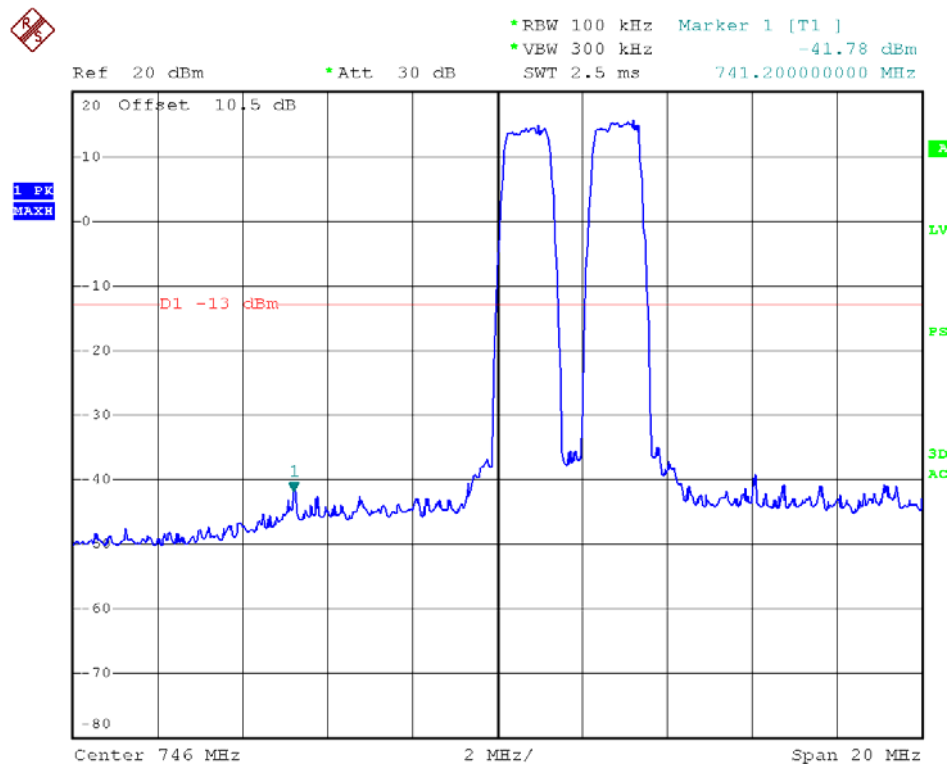
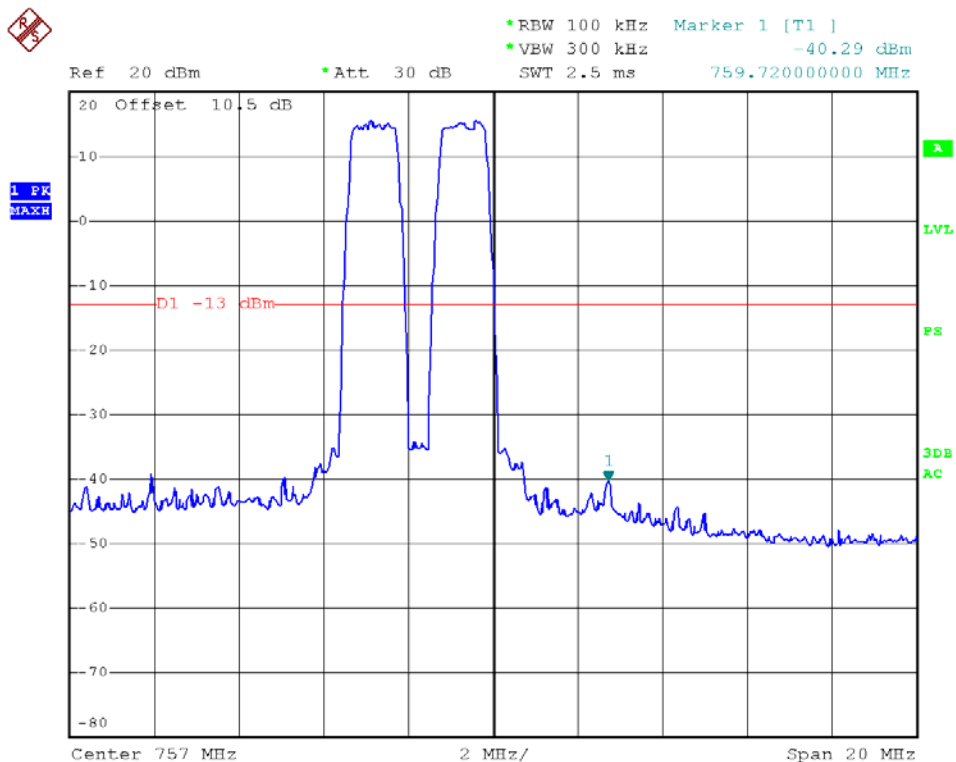


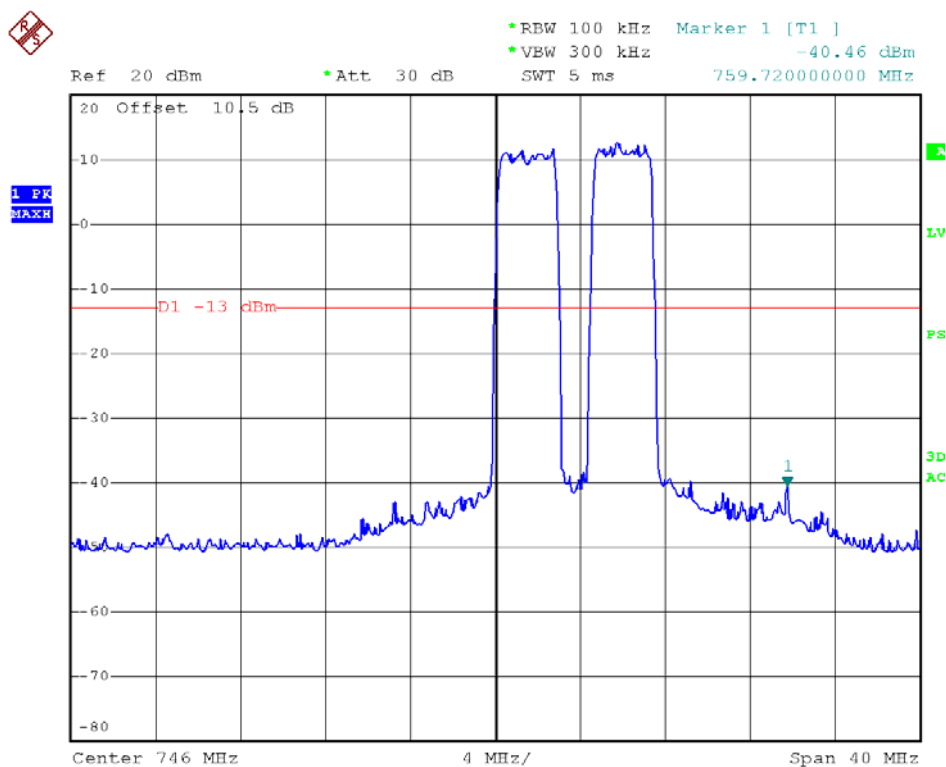
Fig.2 Up Link Intermodulation

Test Procedure:

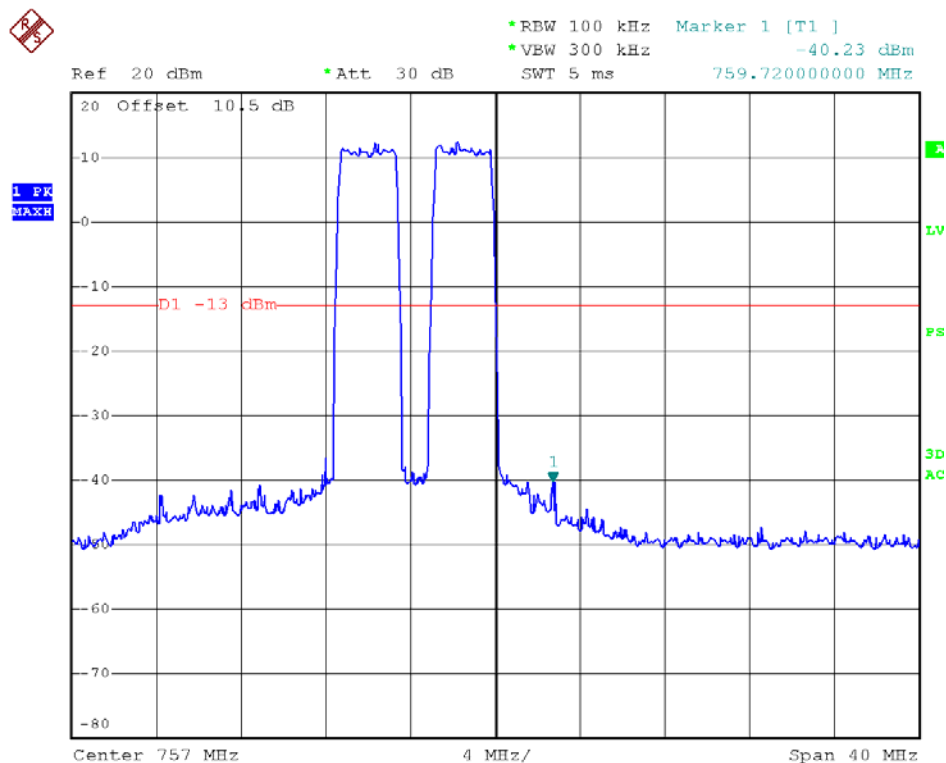
1. Connect the equipment as illustrated,
 2. Test the background noise level with all the test facilities
 3. Keep one transmitting path, all other connectors shall be connected by normal power or RF leads
 4. Select the attenuator to avoid the test receiver or spectrum analyzer being destroyed
 5. Keep the EUT continuously transmitting in max power
 6. Keep two signal generator produce two signal are same in modulation type and level
 7. Measurement the 3 order intermodulated produced by the EUT (the sum of the two unwanted signal should be rated power)
 8. Correct for all losses in the RF path
 9. Read the conducted spurious emission of the EUT antenna port.
- CW signal rather than typical signal is acceptable(for FM)
 At maximum drive level, for each modulation:one test with three tones, or two tests(high, low-band edge)with two tones
 Limit usually is -13dBm conducted
 Not need for signal channel systems
 Combination of modulation types not needed

4.2.6.1 MEASUREMENT RECORD**700MHz****700MHz-LTE-1.4M downlink-Lower Edge****700MHz-LTE-1.4M downlink-Upper Edge**

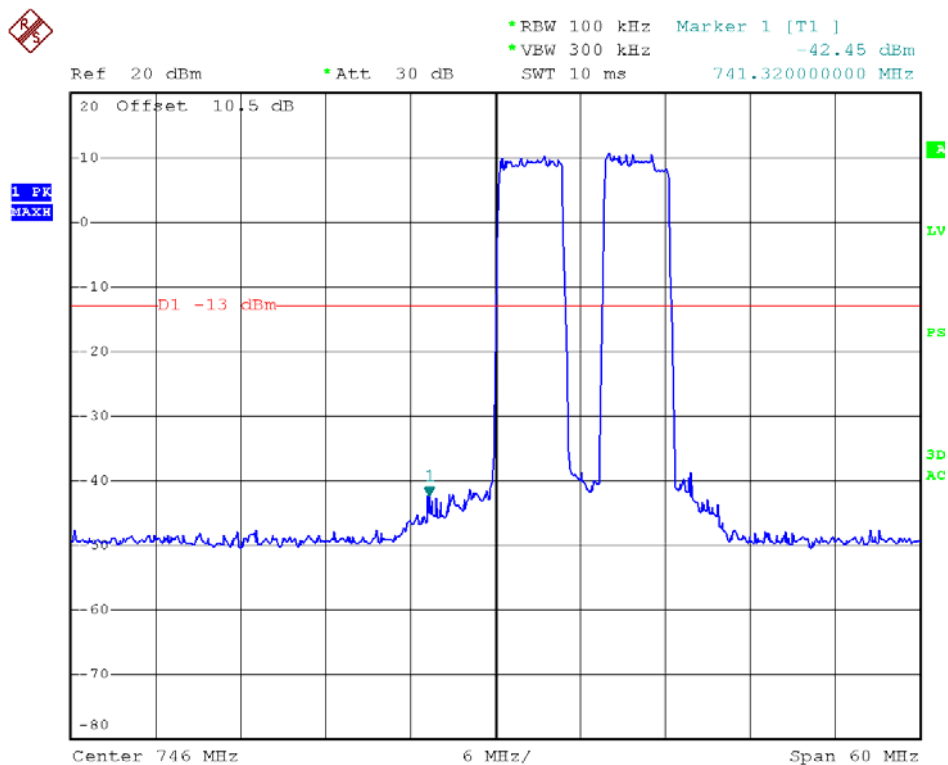
700MHz-LTE-3M downlink-Lower Edge



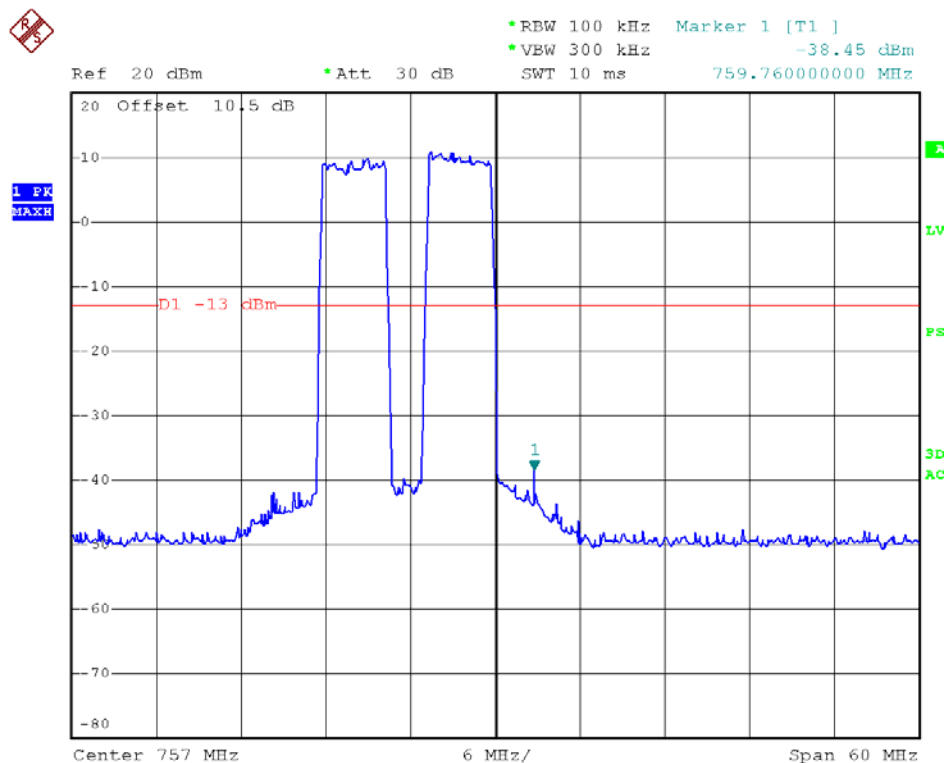
700MHz-LTE-3M downlink-Upper Edge

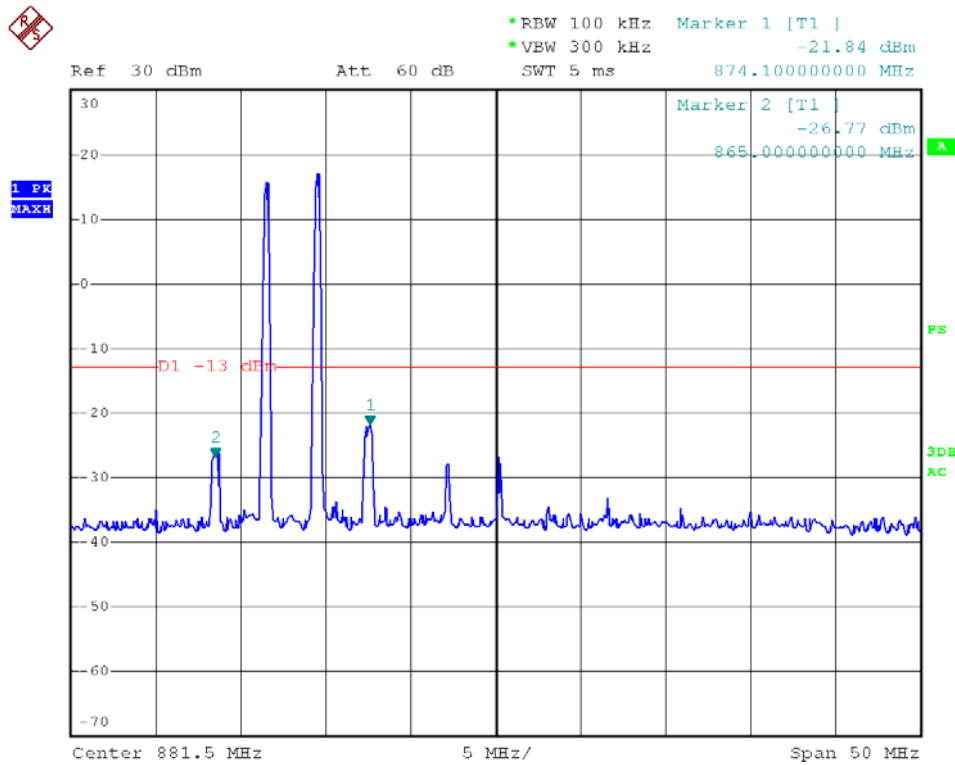
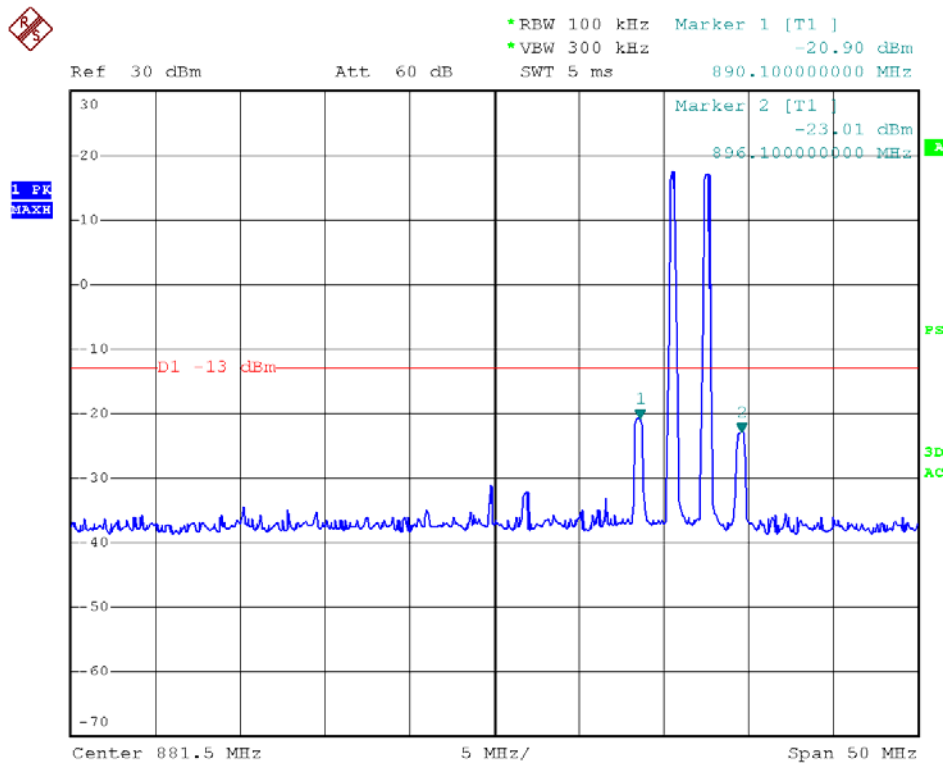


700MHz-LTE-5M downlink-Lower Edge

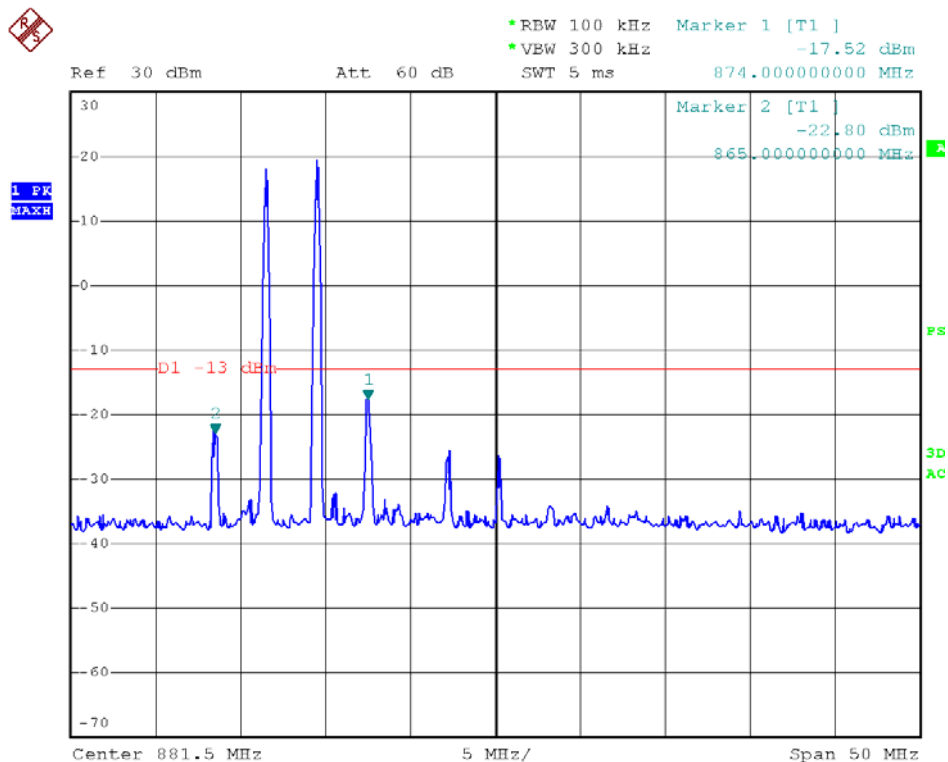


700MHz-LTE-5M downlink-Upper Edge

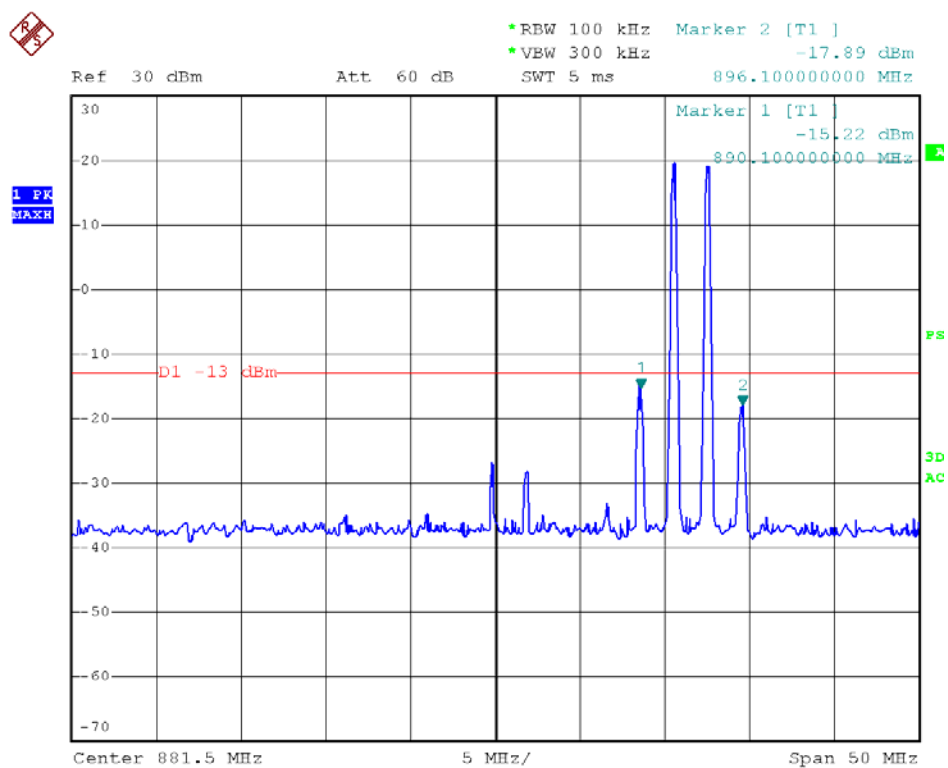


850MHz**850MHz-GSM downlink-Lower Edge****850MHz-GSM downlink-Upper Edge**

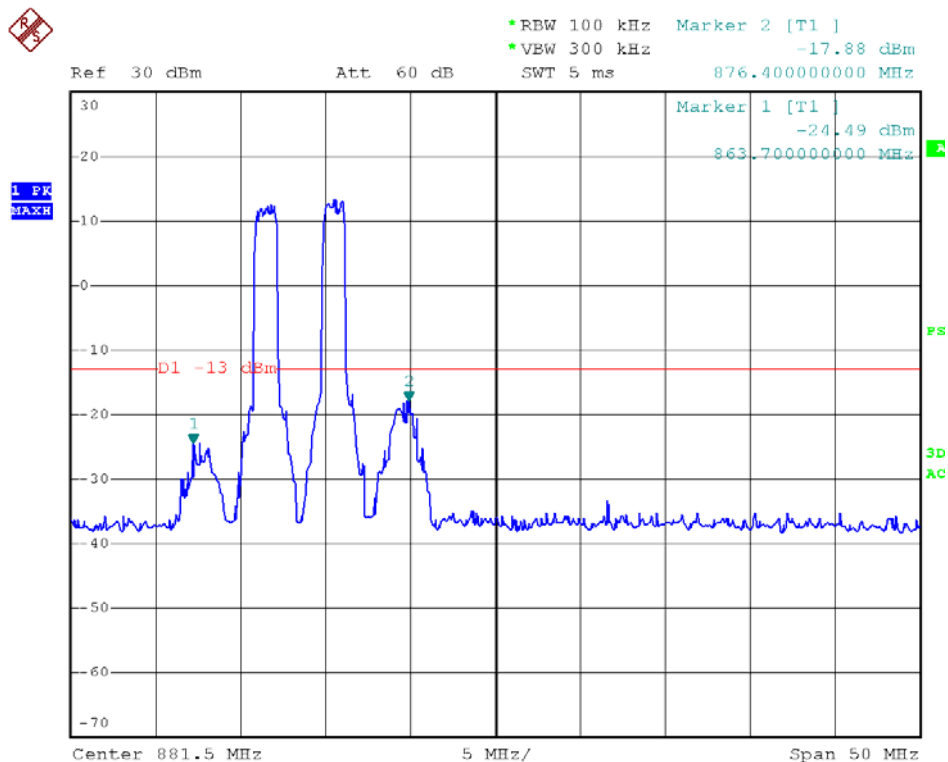
850MHz-EDGE downlink-Lower Edge



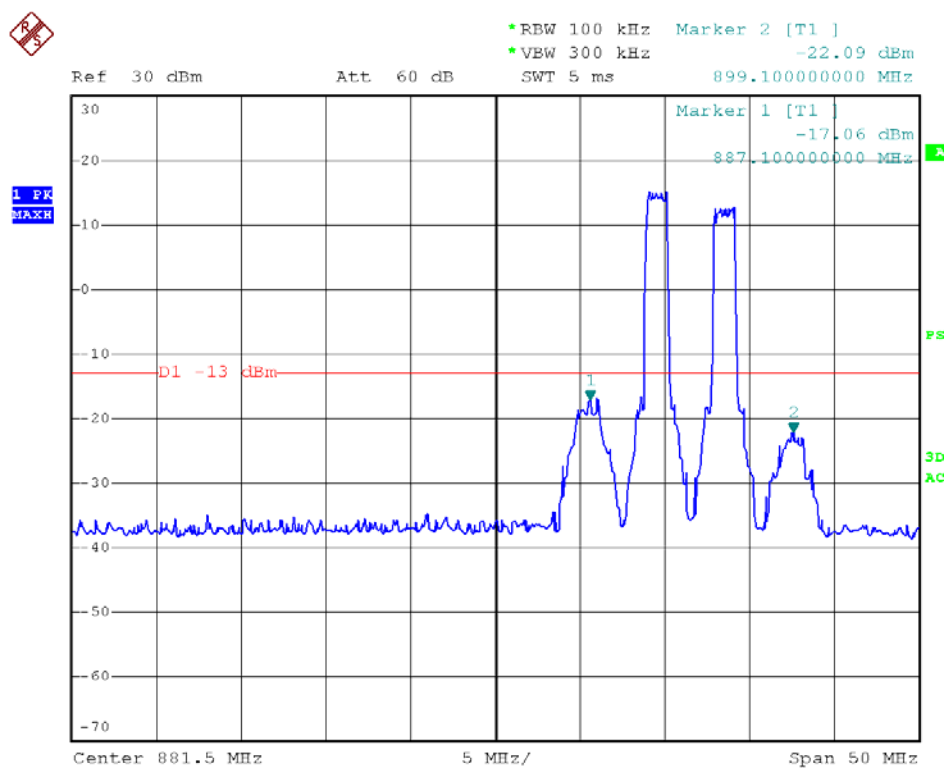
850MHz-EDGE downlink-Upper Edge



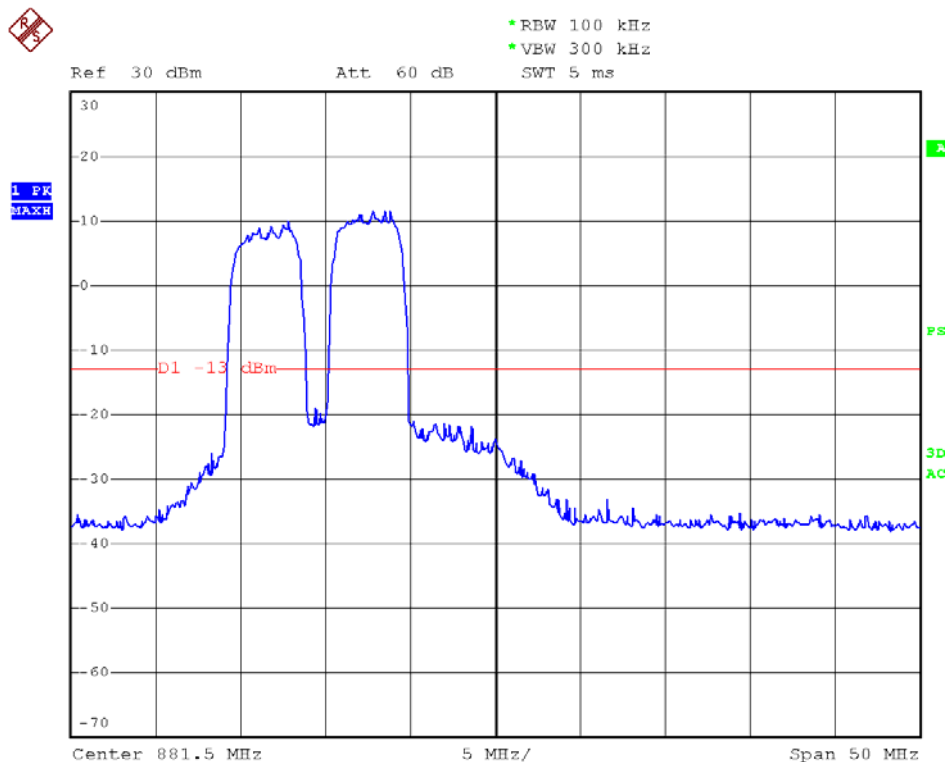
850MHz-CDMA2000 downlink-Lower Edge



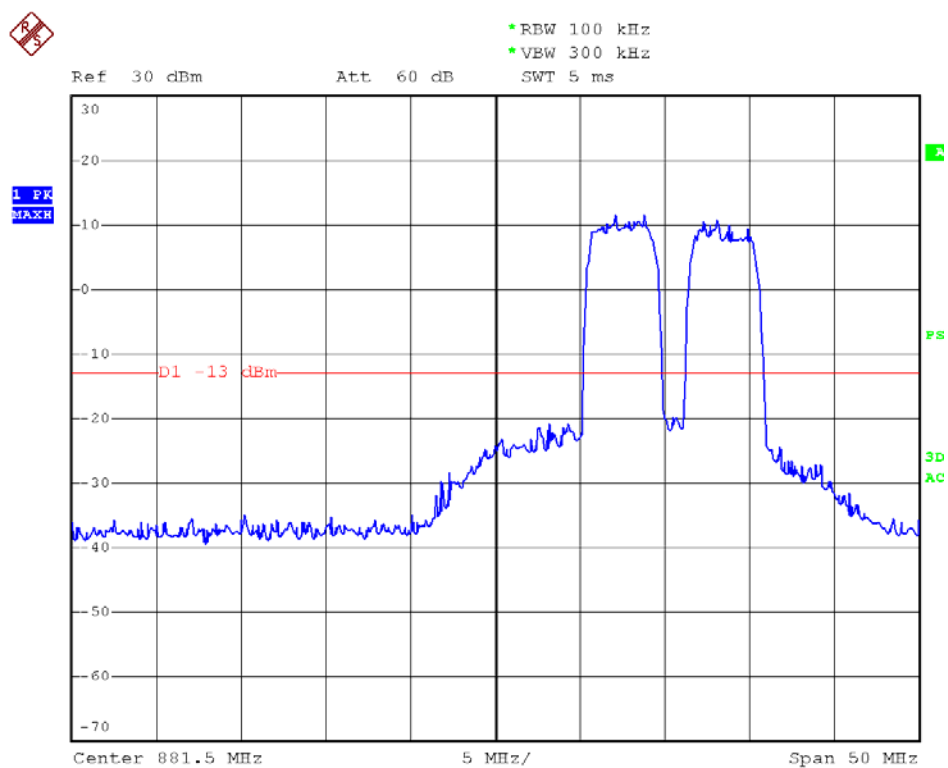
850MHz-CDMA2000 downlink-Upper Edge



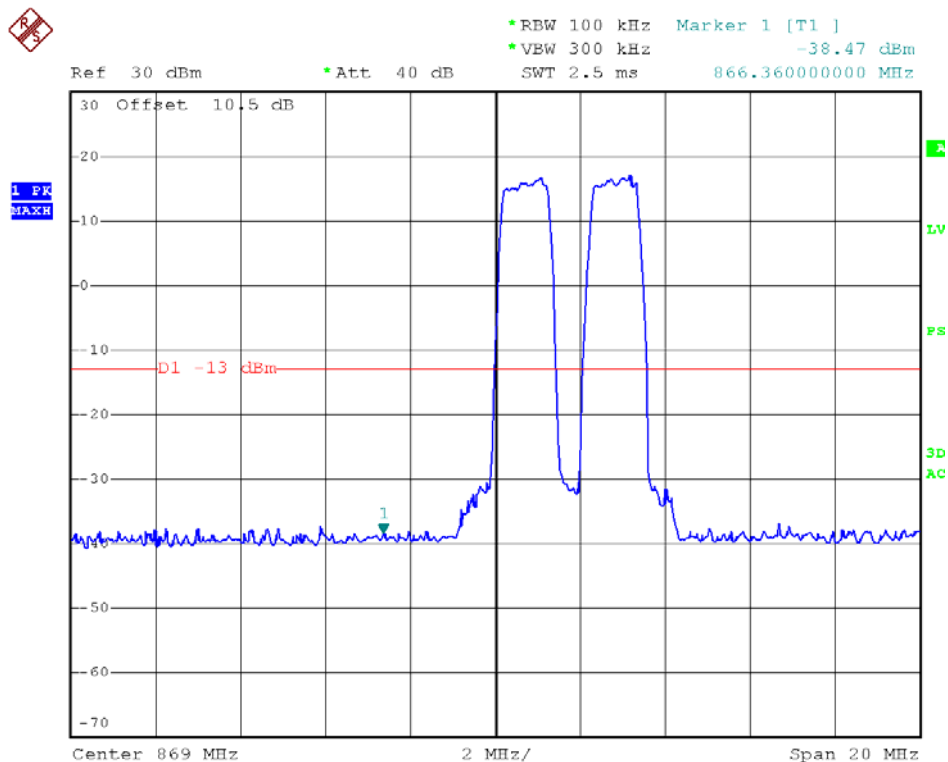
850MHz-WCDMA downlink-Lower Edge



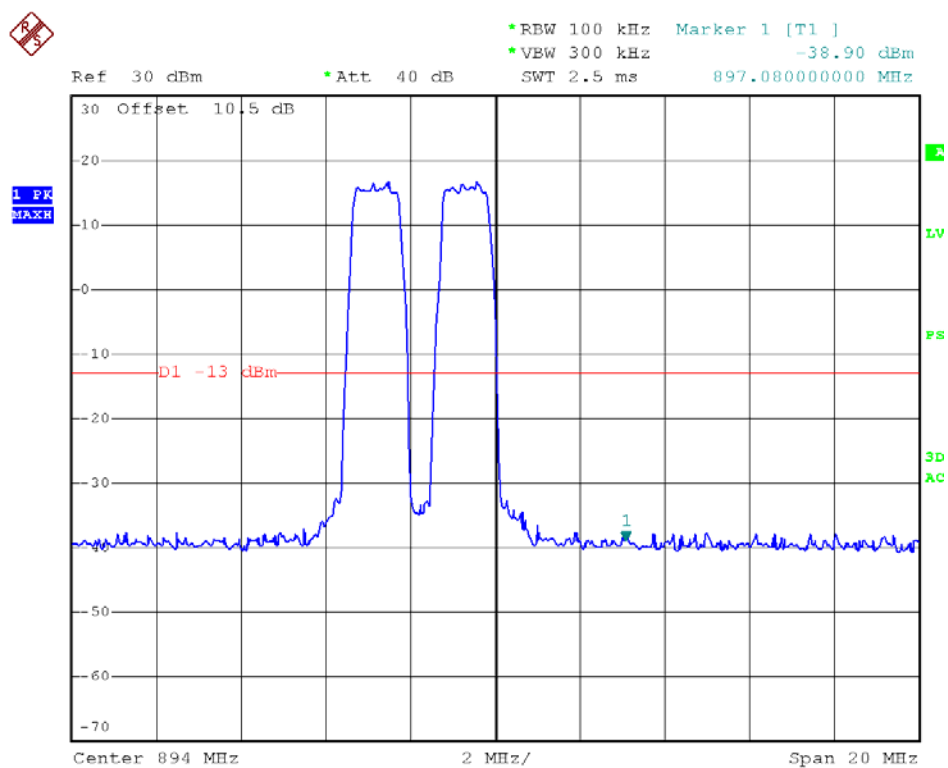
850MHz-WCDMA downlink-Upper Edge



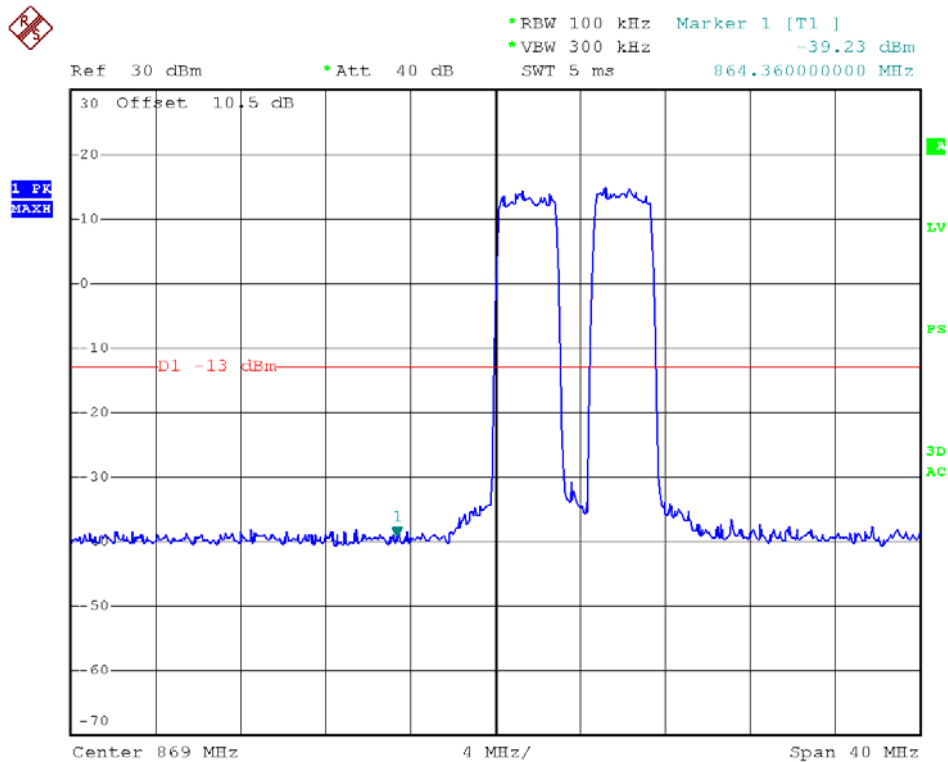
850MHz-LTE-1.4M downlink-Lower Edge



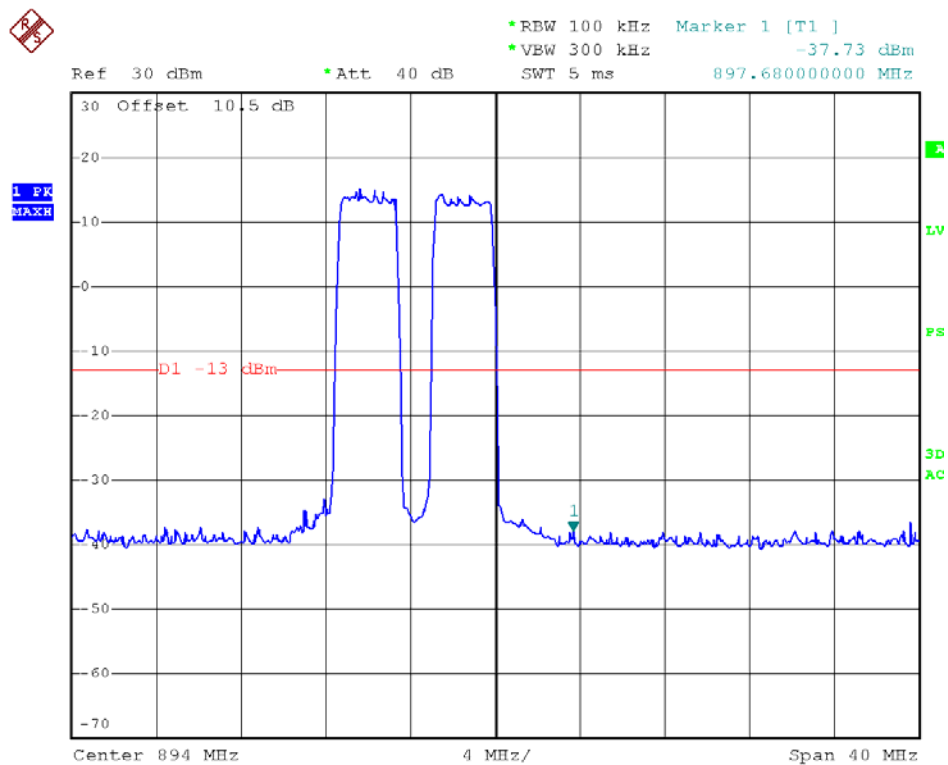
850MHz-LTE-1.4M downlink-Upper Edge



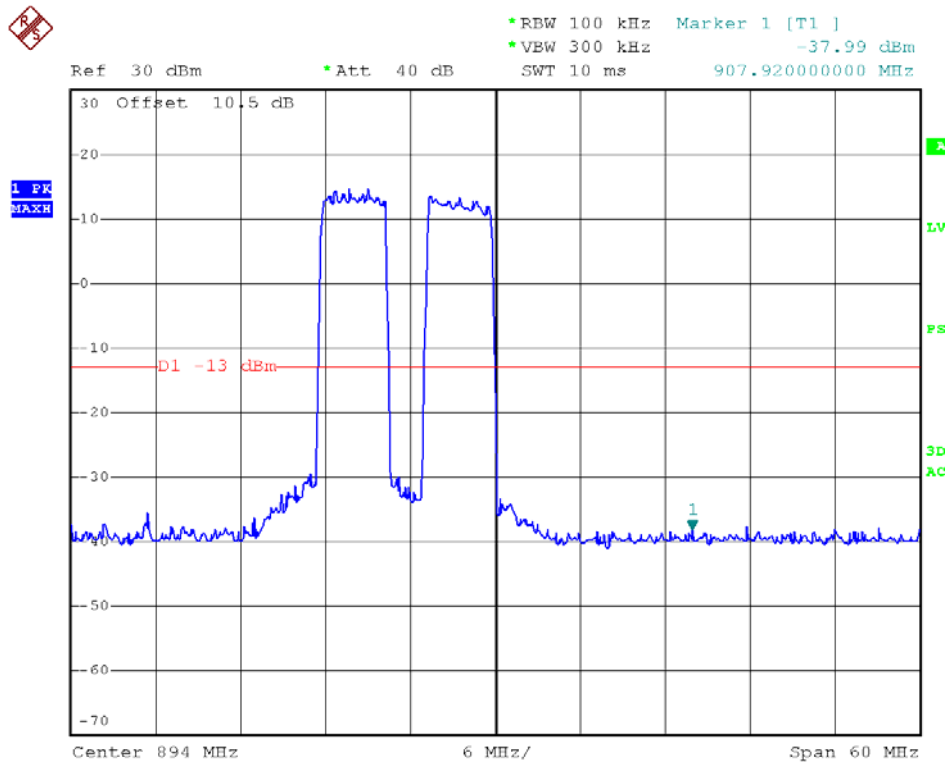
850MHz-LTE-3M downlink-Lower Edge



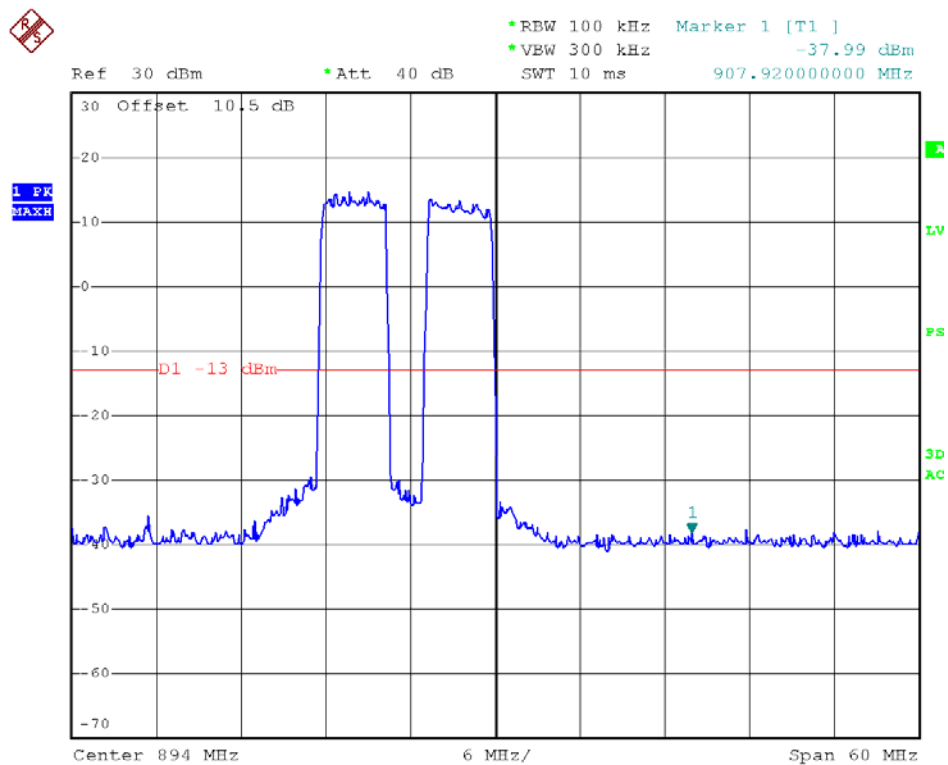
850MHz-LTE-3M downlink-Upper Edge

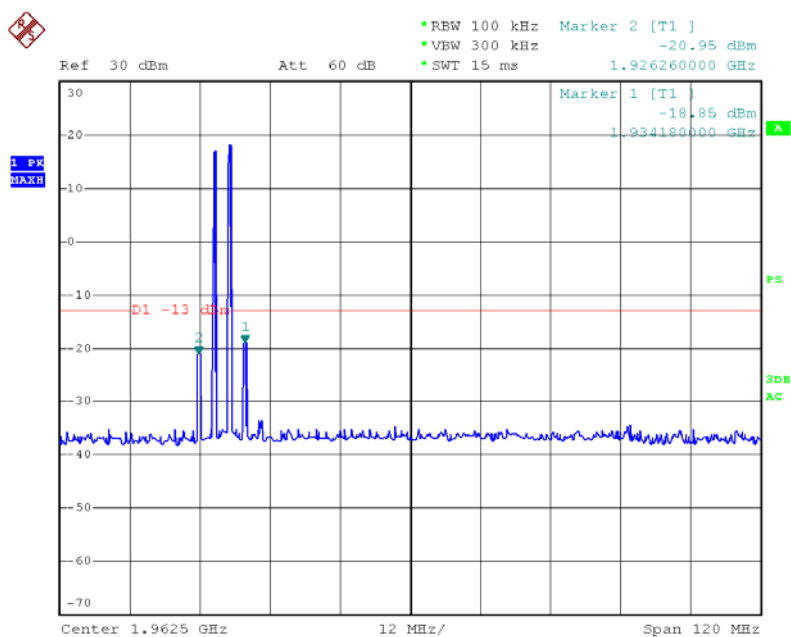
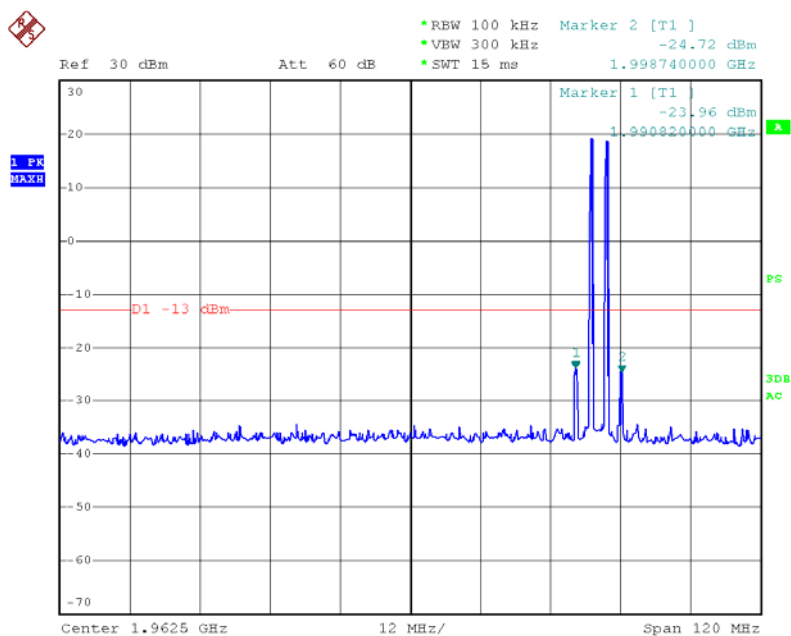


850MHz-LTE-5M downlink-Lower Edge

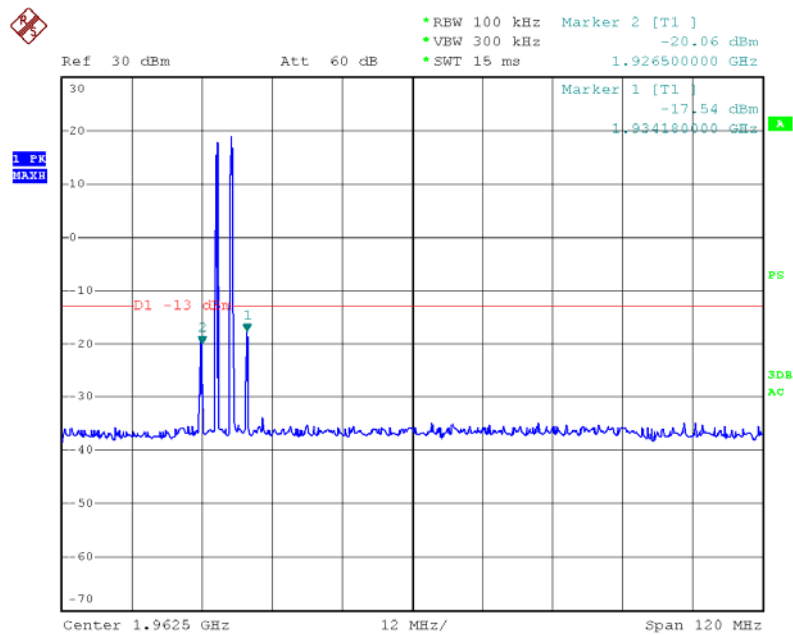


850MHz-LTE-5M downlink-Upper Edge

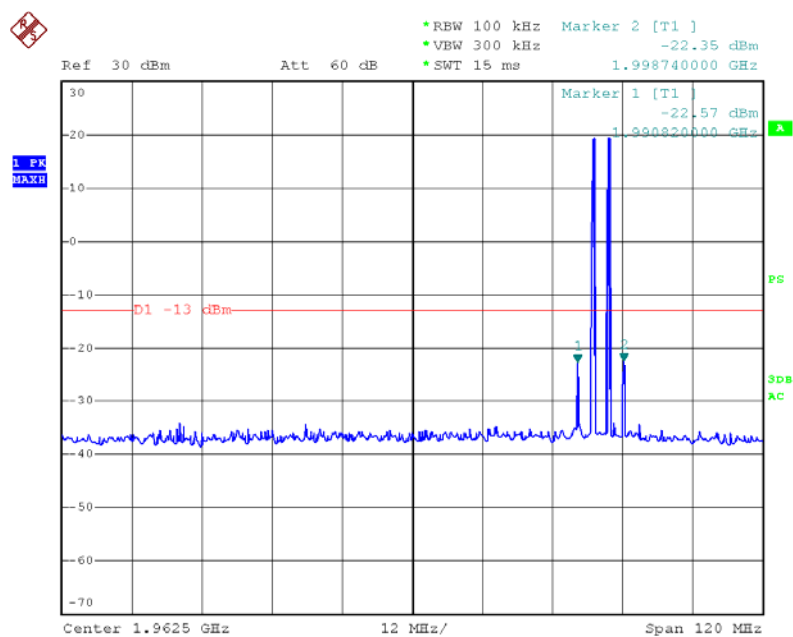


1900MHz**1900MHz-GSM downlink-Lower Edge****1900MHz-GSM downlink-Upper Edge**

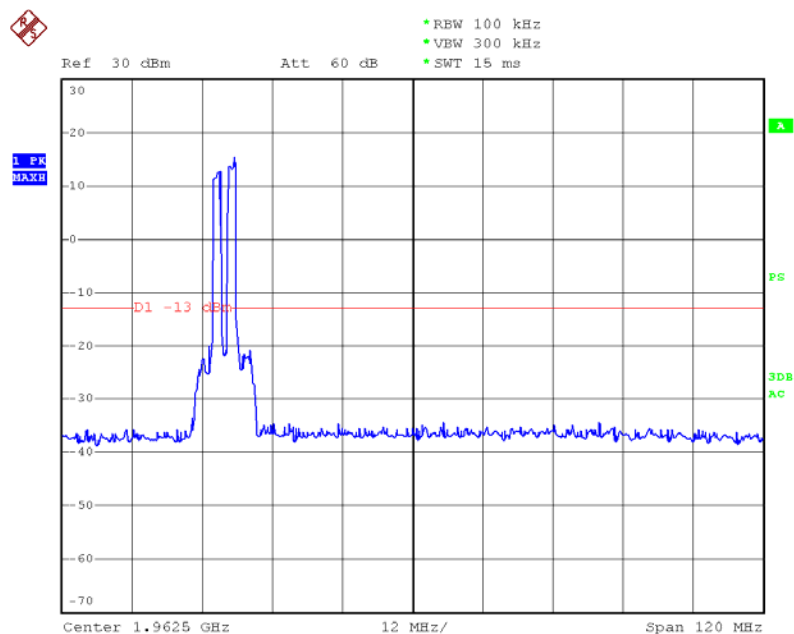
1900MHz-EDGE downlink-Lower Edge



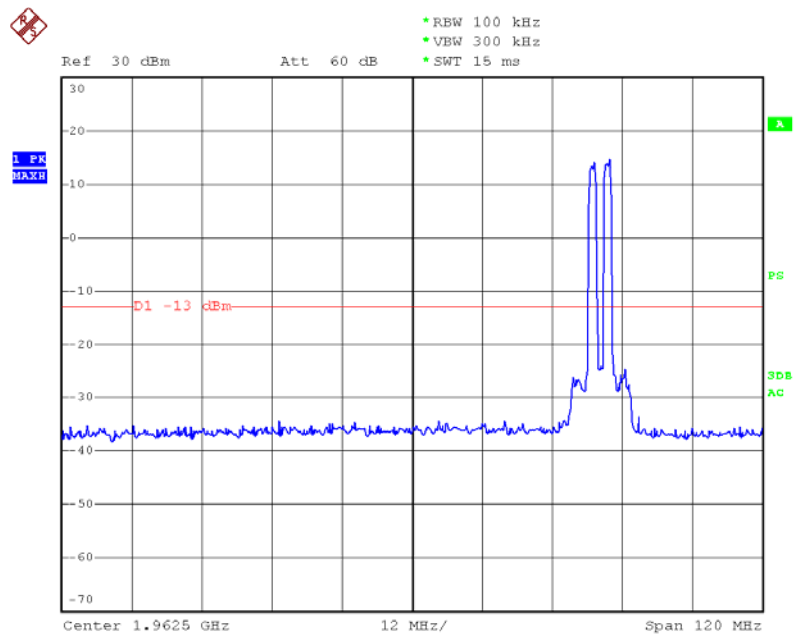
1900MHz-EDGE downlink-Upper Edge



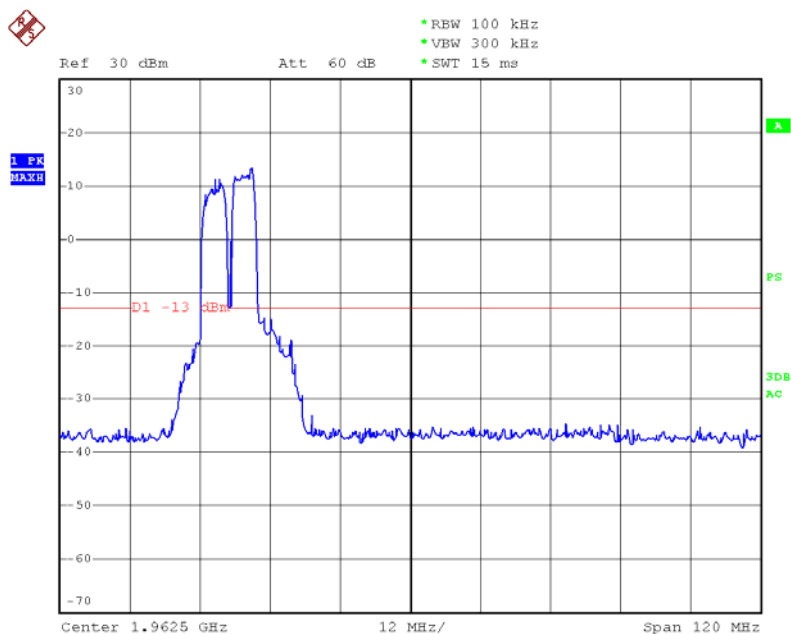
1900MHz-CDMA2000 downlink-Lower Edge



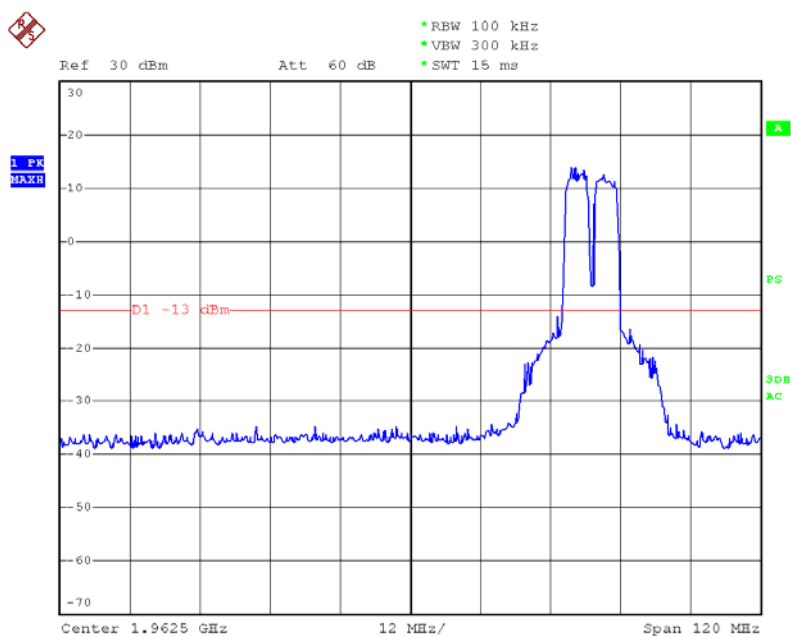
1900MHz-CDMA2000 downlink-Upper Edge



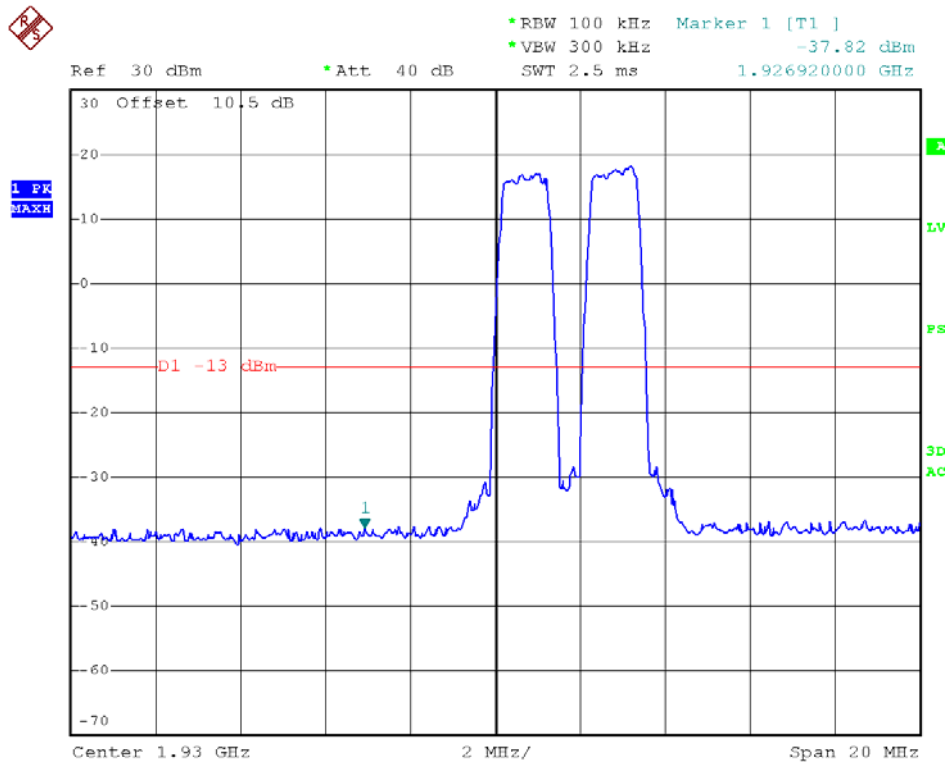
1900MHz-WCDMA downlink-Lower Edge



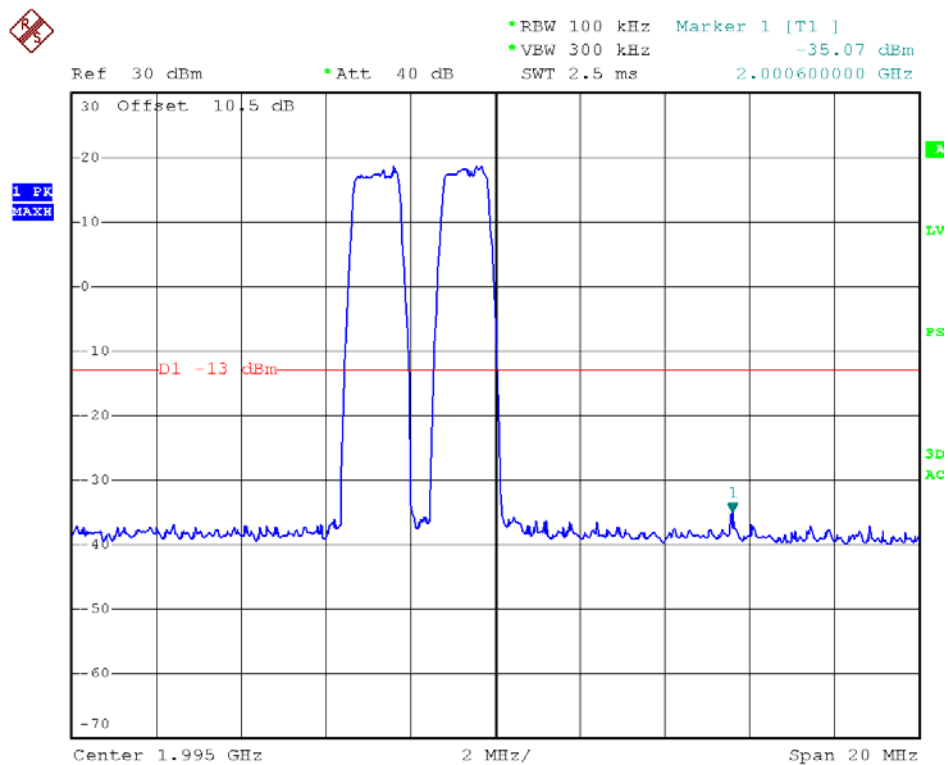
1900MHz-WCDMA downlink-Upper Edge



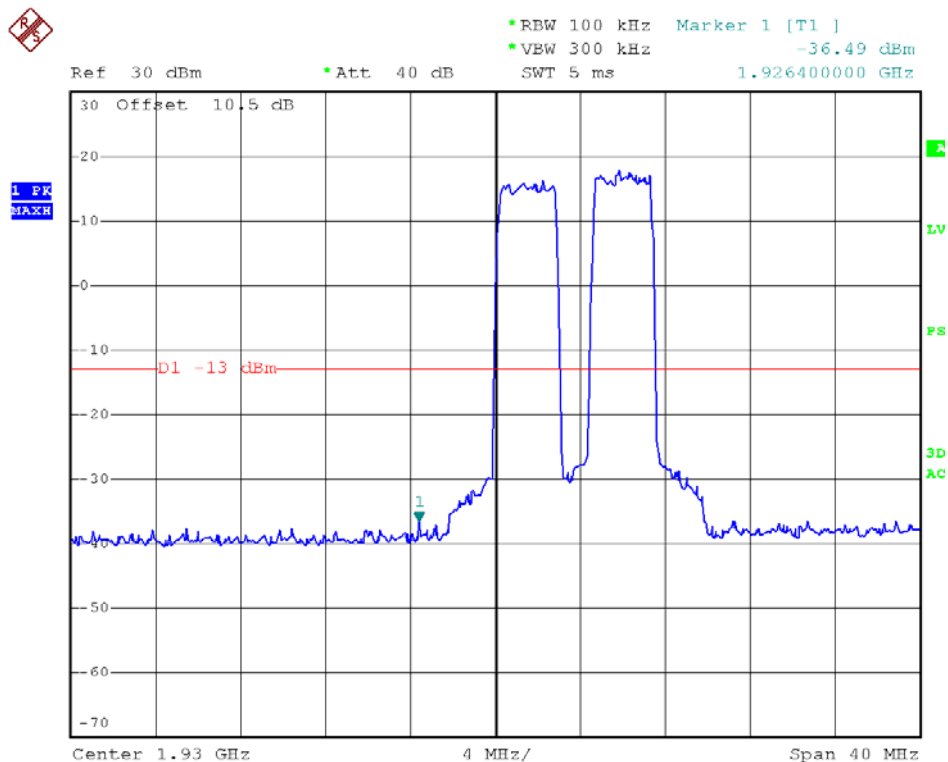
190MHz-LTE-1.4M downlink-Lower Edge



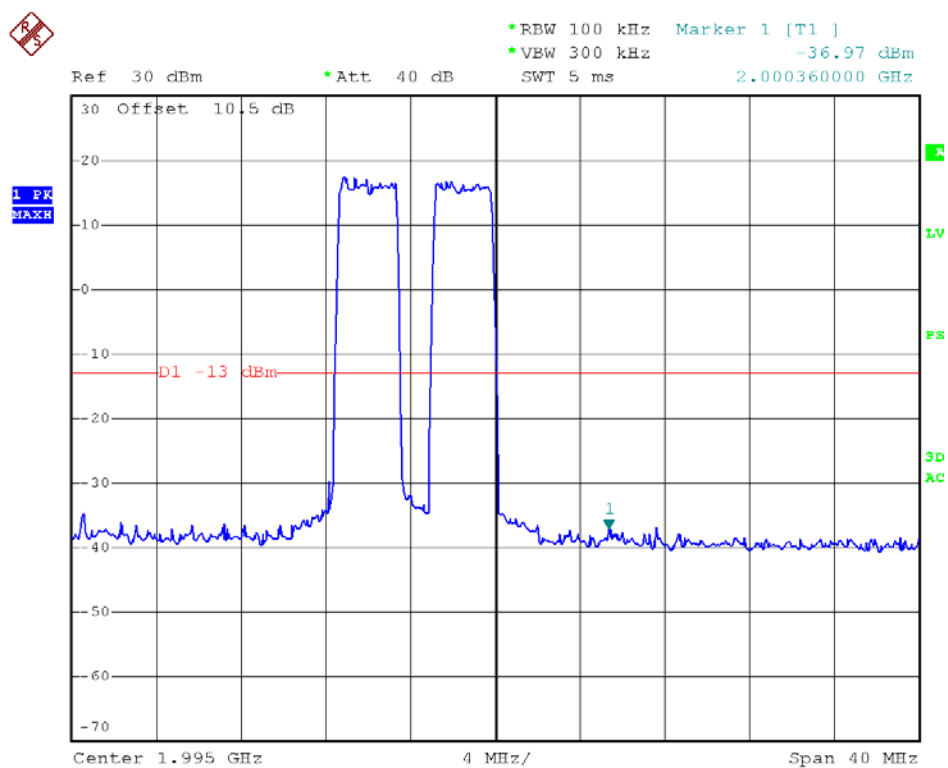
1900MHz-LTE-1.4M downlink-Upper Edge



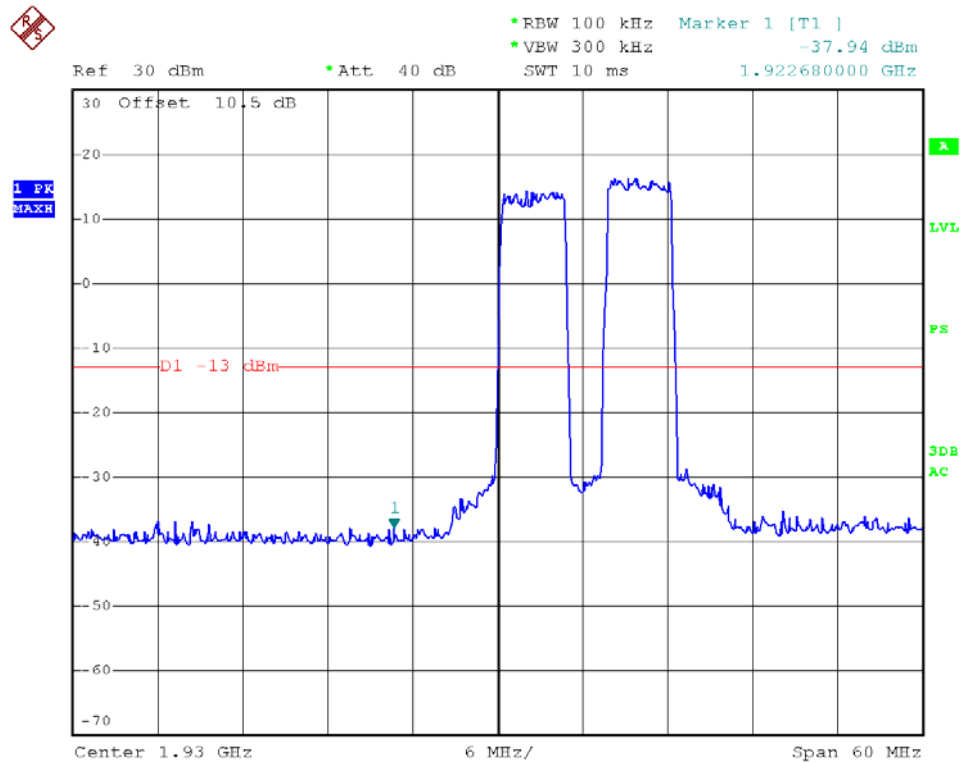
1900MHz-LTE-3M downlink-Lower Edge



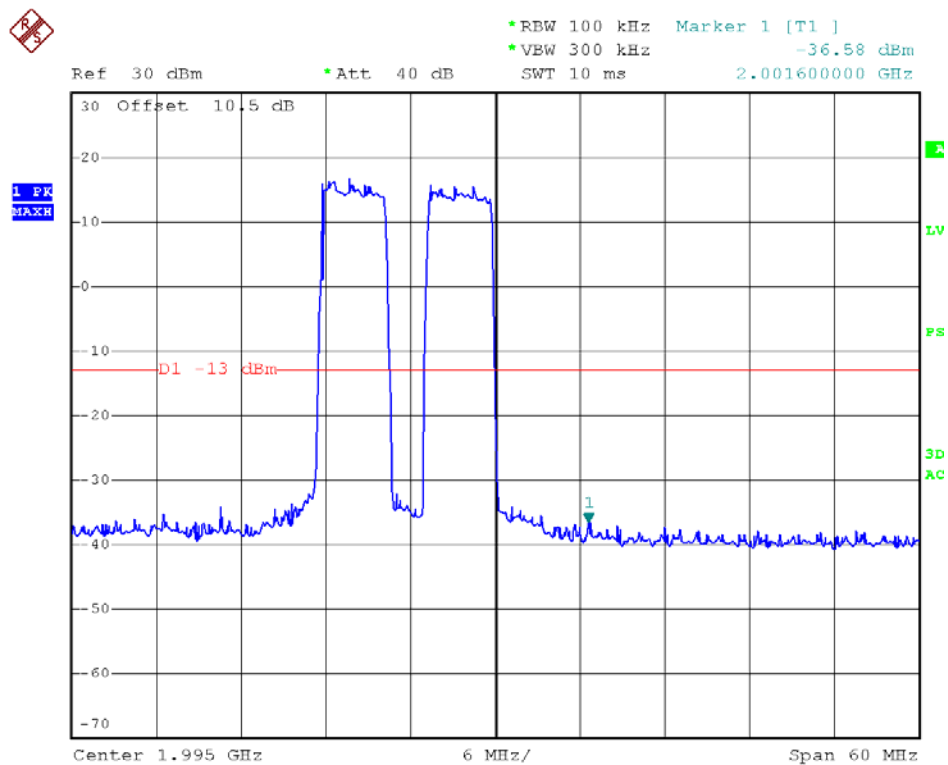
1900MHz-LTE-3M downlink-Upper Edge



1900MHz-LTE-5M downlink-Lower Edge



1900MHz-LTE-5M downlink-Upper Edge



Remark:

For the test in two signal input or intermodulation, test input signal f_1 and f_2 will consider as follows conditions:

7) EUT frequency band span and the amount of channels;

8) f_1 is the frequency lower, f_2 is the frequency higher, f is the channel spacing;

9) in lower edge test, f_1 is the lower frequency+1 channel frequency, and f_2 is +2 channel frequency;

10) in higher edge test, f_1 is the higher frequency-2 channel frequency, and f_2 is -1 channel frequency;

11) according to the amplifier characteristic, the 3rd product will appear when two signals input;

12) base the 3rd product frequency $F_1 = 2f_1 - f_2$, and $F_2 = 2f_2 - f_1$, when the f_1 and f_2 frequency select above,

a) in lower edge test, $F_1 = 2f_1 - (f_1 + f) = f_1 - f$ = lower edge frequency;

b) in higher edge test, $F_2 = 2f_2 - (f_1 - f) = f_1 + f$ = higher edge frequency

4.2.7 OUT OF BAND REJECTION

Test Date:	29 December, 2012
Test Method:	2-11-04/EAB/RF
Test Requirement:	2-11-04/EAB/RF Test for rejection of out of band signals, Filter freq, response plots are acceptable
Specification	The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block, The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency
Status	The output power of EUT be set to maximum value, the gain of EUT be set to maximum value by software through the manufacture
Conditions	Normal conditions
Application	700MHz Downlink and Uplink ports 850MHz Downlink and Uplink ports 1900MHz Downlink and Uplink ports
Test configuration	

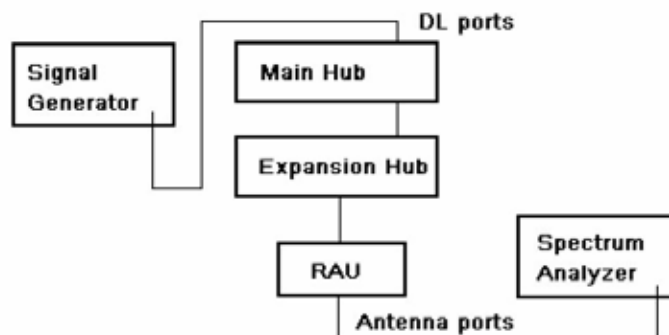
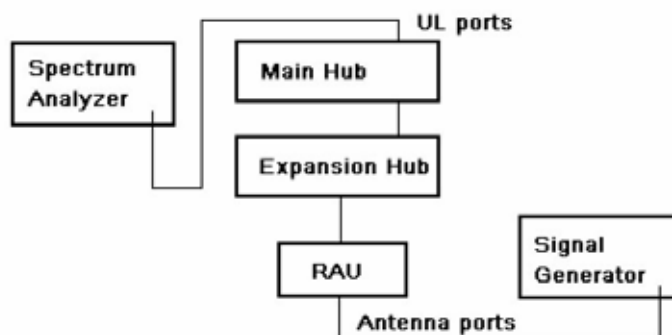


Fig.1 Down Link Configuration



Test procedure

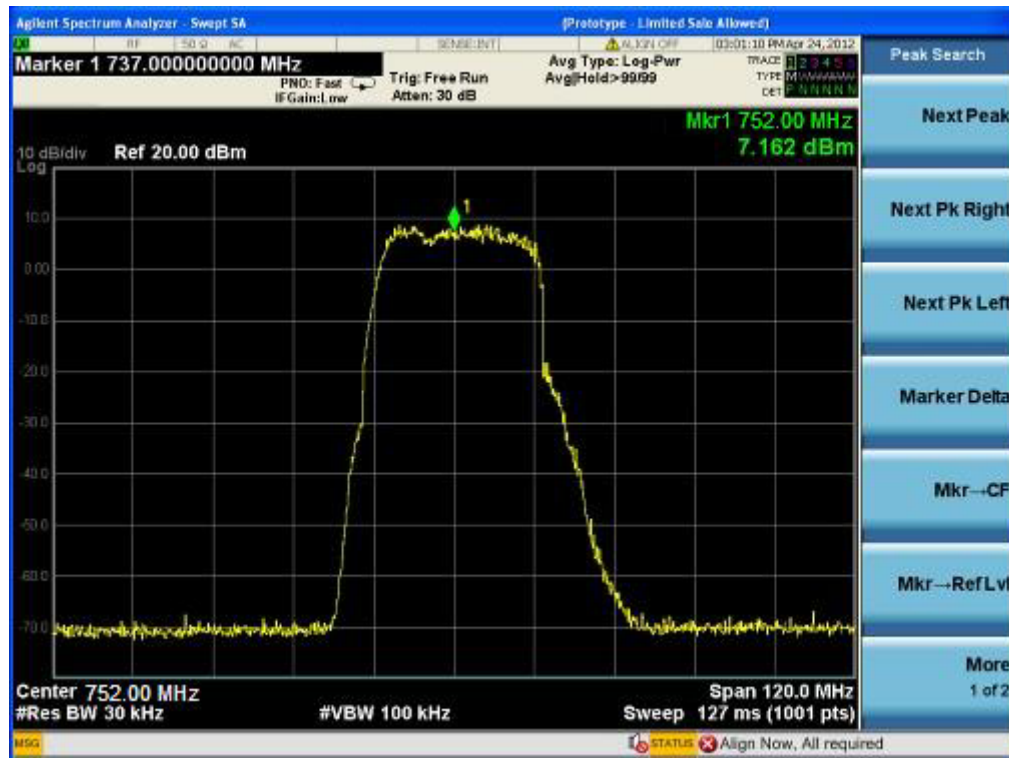
Fig.2 Up Link Configuration

- 1.Connecet the equipment as illustrated;
 - 2.Test the background noise level with all the test facilities;
 - 3.Keep one transmitting path,all other connectors shall be connected by normal power or RF leads;
 - 4.Select the attenuator to avoid the test receiver or spectrum analyzer being destroyed ;
 - 5.Keep the EUT continuously transmitting in max power;
 - 6Signal generator sweep from the frequency more lower than the product frequency to the frequency more higher than it,find the product band filter characteristic.
- CW signal rather than typical signal is acceptable (for FM)
- Multiple band filter will need test each other

4.2.7.1 MEASUREMENT RECORD

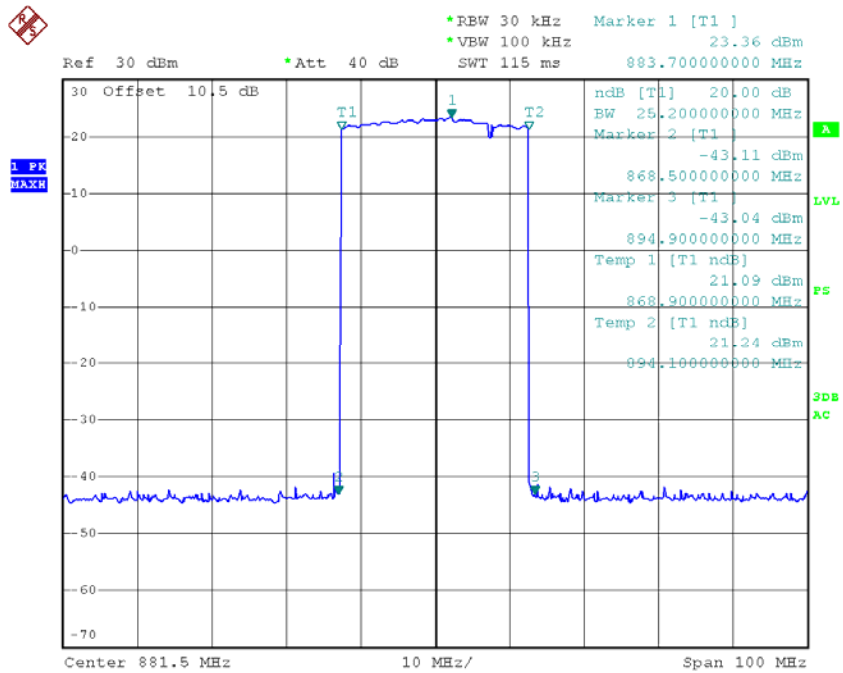
700MHz Band

700MHz-down link

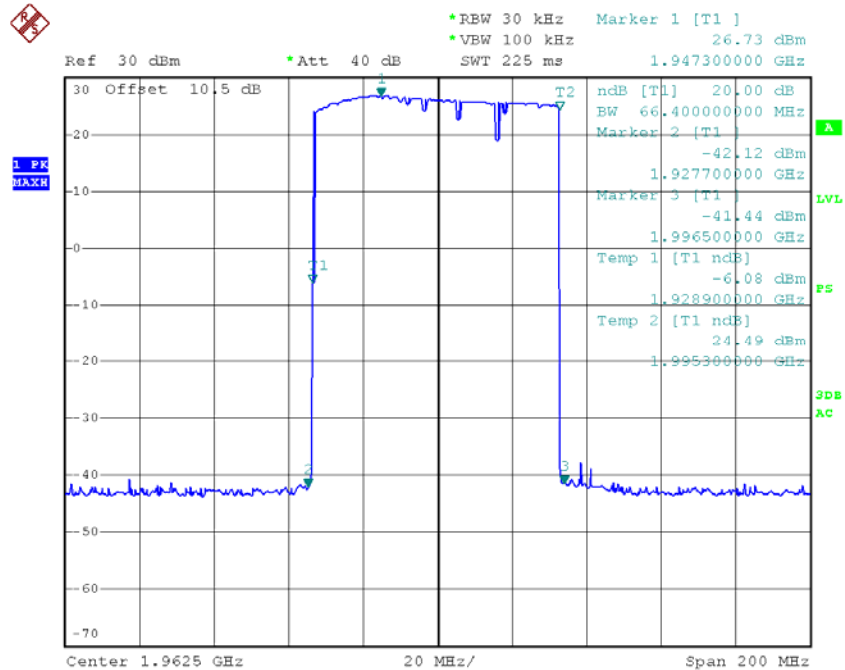


850MHz Band

850MHz-down link

**1900MHz Band**

1900MHz-down link



4.2.8 FREQUENCY STABILITY

Test Date:	29 December, 2012
Test Method:	FCC part 2.1055
Test Requirement:	FCC part 22.355& FCC part 24.235&FCC 27.54
Specification	The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block ,The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency
Status	The output power of EUT be set to maximum value,the gain of EUT be set to maximum value by software through the manufacture
Conditions	Temperature condition, Voltage condition
Application	700MHz Downlink and Uplink ports 850MHz Downlink and Uplink ports 1900MHz Downlink and Uplink ports
Test procedure	1. Temperature conditions: a)record the 20 and normal voltage frequency value as reference point; b)vary the temperature from -30 to 60 with step 10 c)when reach a temperature point ,keep the temperature banlance at least 1 hour to make the product working in this status; d)record the frequency at the relative temperature. 2. Voltage condition : a)record the 20 and normal voltage frequency value as reference point; b)vary the voltage from -15% norminal voltage to +15% voltage c)read the frequency at the relative voltage.

4.2.8.1 MEASUREMENT RECORD

1.Frequency Stability vs temperature

700MHz

Temperature()	Frequency(MHz)	Tolerance(ppm)
60	752.000485	0.645
50	752.000467	0.621
40	752.000458	0.609
30	752.000447	0.594
20	752.000472	0.628
10	752.000481	0.640
0	752.000445	0.592
-10	752.000484	0.644
-20	752.000466	0.620
-30	752.000463	0.616

850MHz

Temperature()	Frequency(MHz)	Tolerance(ppm)
60	881.500467	0.530
50	881.500455	0.516
40	881.500523	0.593
30	881.500475	0.539
20	881.500464	0.526
10	881.500448	0.508
0	881.500426	0.483
-10	881.500415	0.471
-20	881.500413	0.469
-30	881.500423	0.480

1900MHz

Temperature()	Frequency(MHz)	Tolerance(ppm)
60	1962.500465	0.237
50	1962.500447	0.228
40	1962.500472	0.241
30	1962.500415	0.211
20	1962.500456	0.232
10	1962.500524	0.267
0	1962.500468	0.238
-10	1962.500285	0.145
-20	1962.500376	0.192
-30	1962.500395	0.201

2.Frequency Stability vs voltage

700MHz

Voltage(V)	Frequency(MHz)	Tolerance(ppm)
102 (120*0.85)	752.000464	0.617
120	752.000455	0.605
138(120*1.15)	752.000443	0.589

850MHz

Voltage(V)	Frequency(MHz)	Tolerance(ppm)
102 (120*0.85)	881.500465	0.528
120	881.500474	0.538
138(120*1.15)	881.500472	0.535

1900MHz

Voltage(V)	Frequency(MHz)	Tolerance(ppm)
102 (120*0.85)	1962.500474	0.242
120	1962.500468	0.238
138(120*1.15)	1962.500485	0.252

APPENDIX A:PHOTOGRAPH OF THE TEST CONFIGURATION

RE (Blowe 1GHz)

Front



Behind



RE (Above 1GHz)

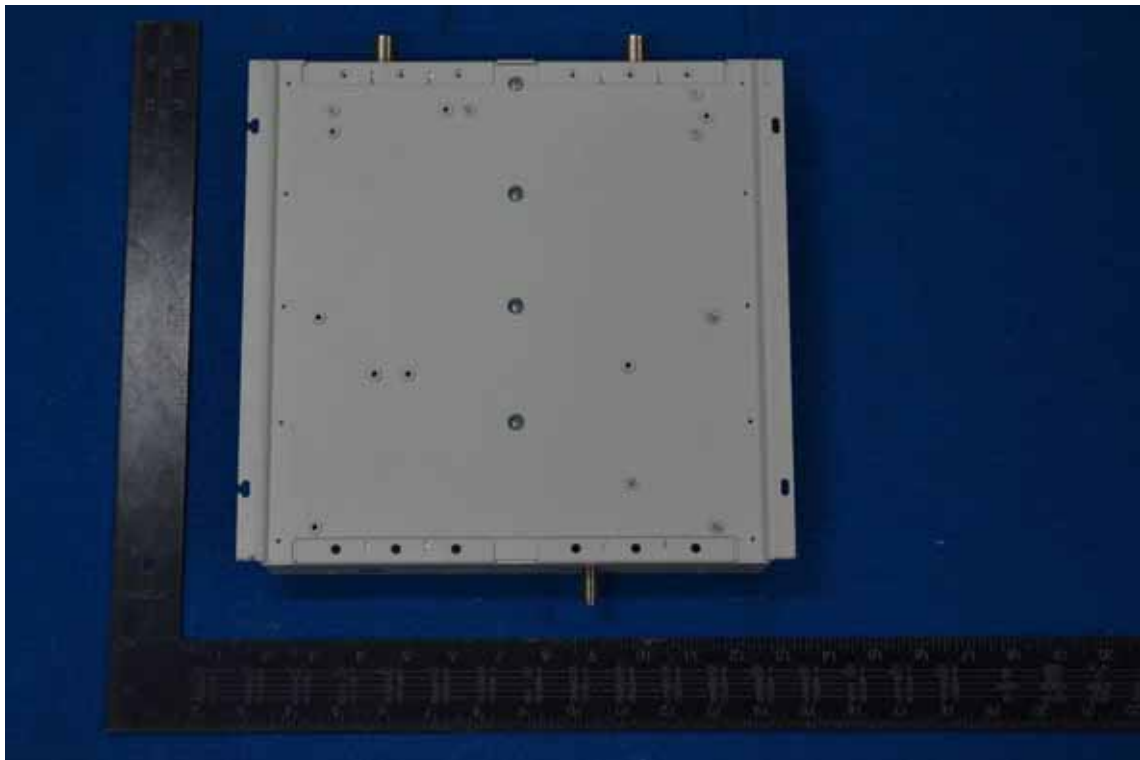
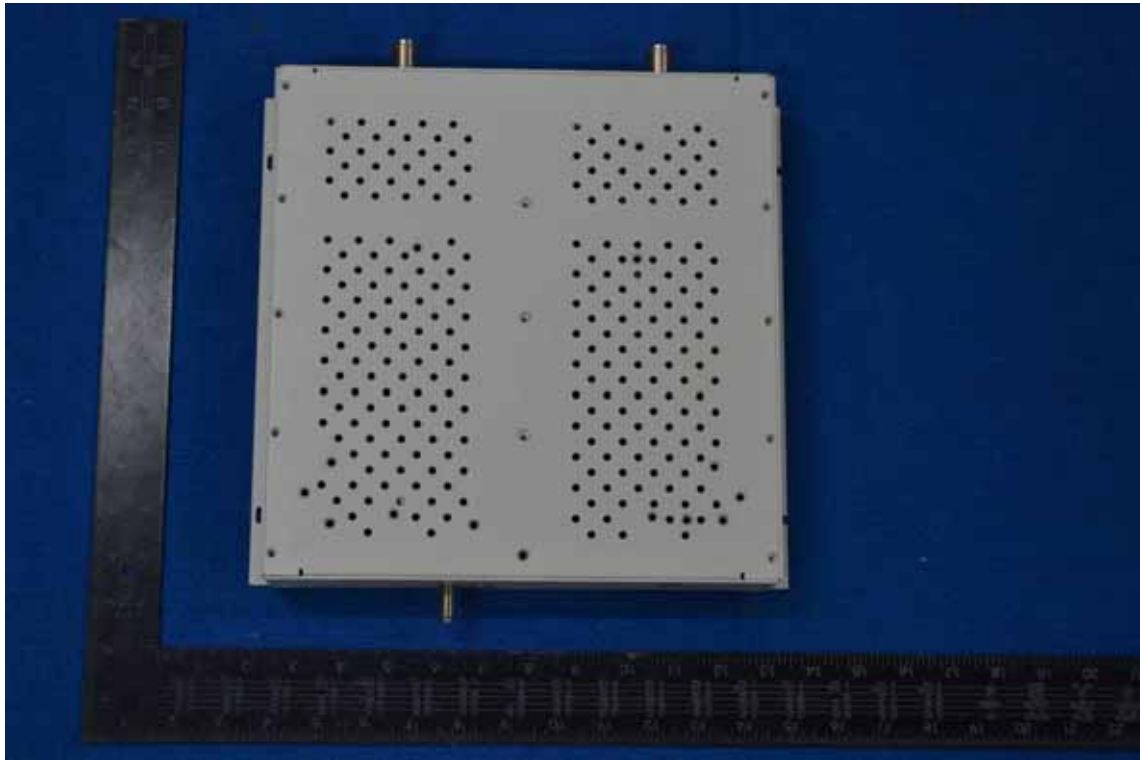
Front

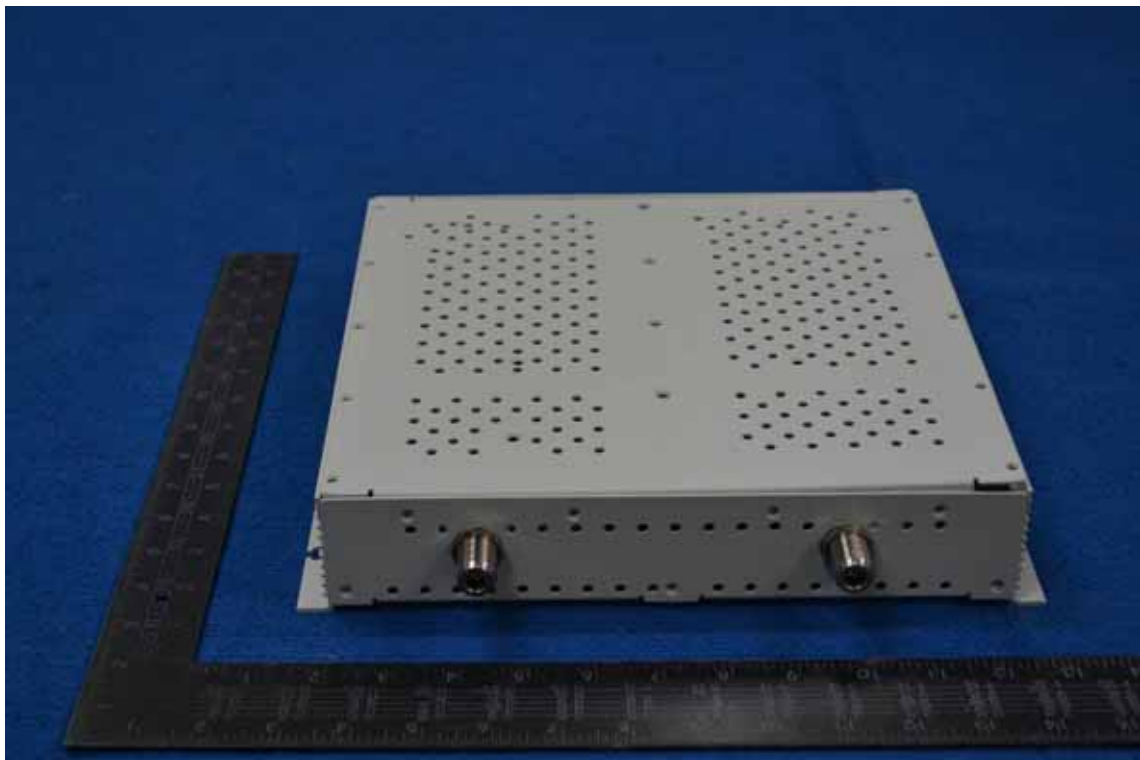
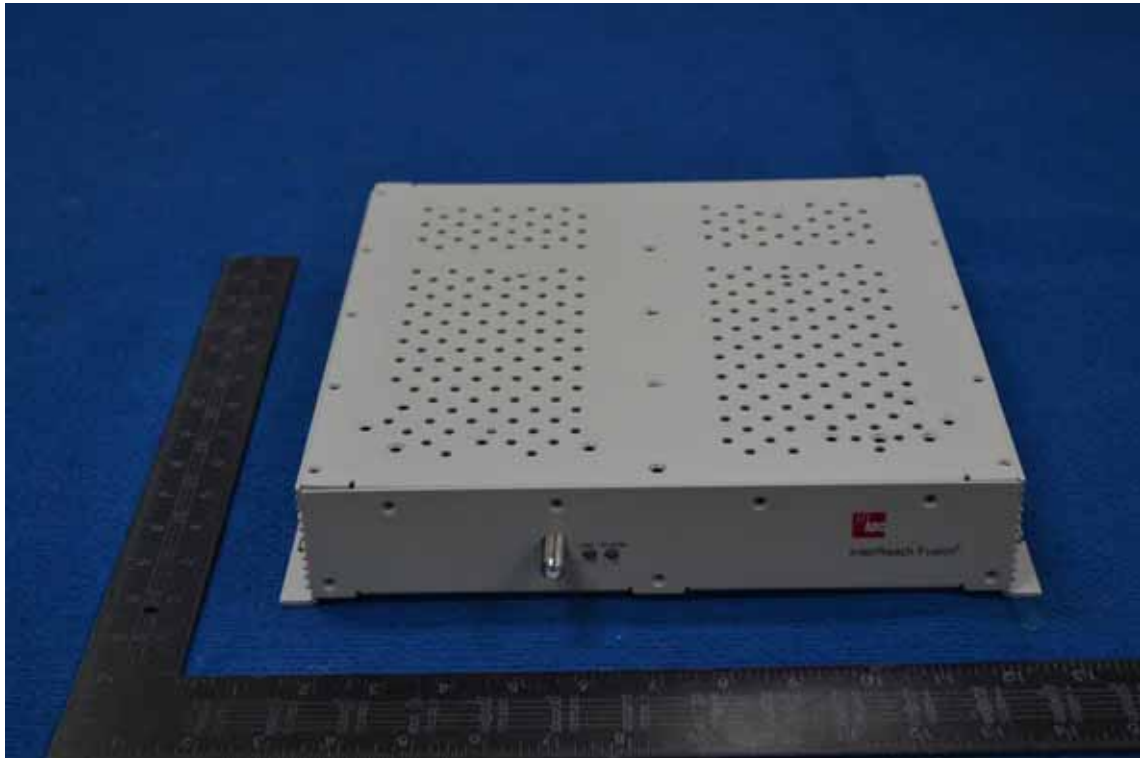


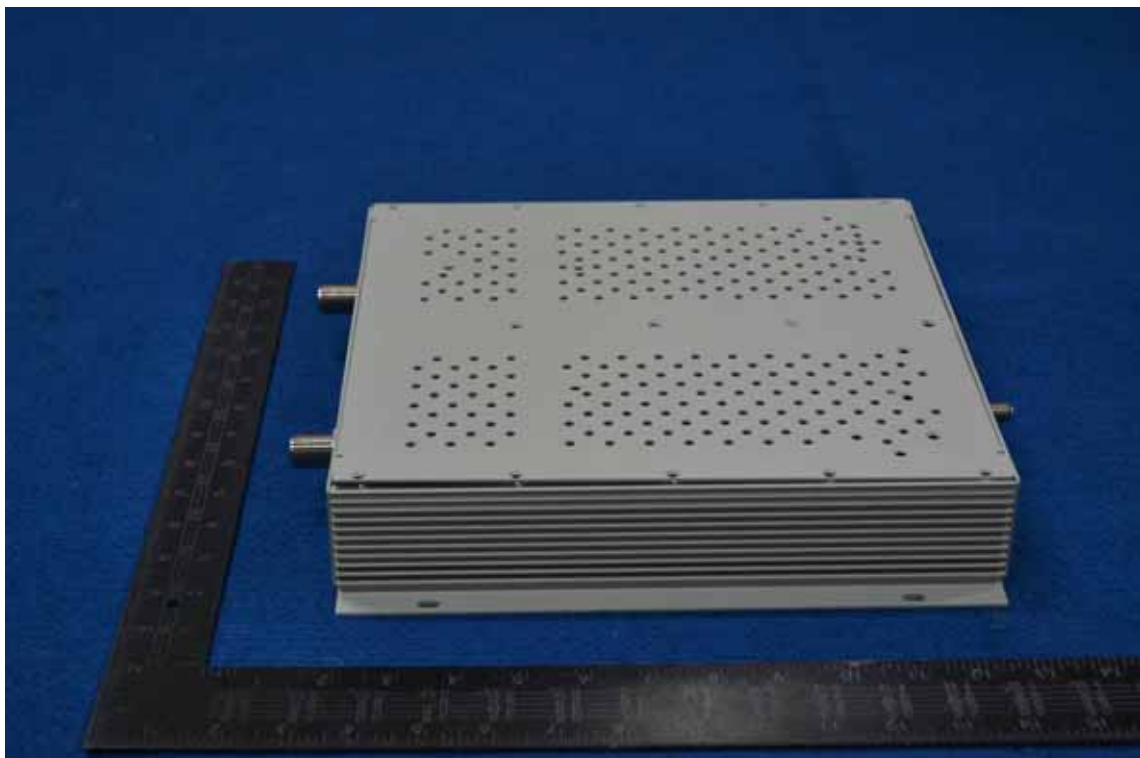
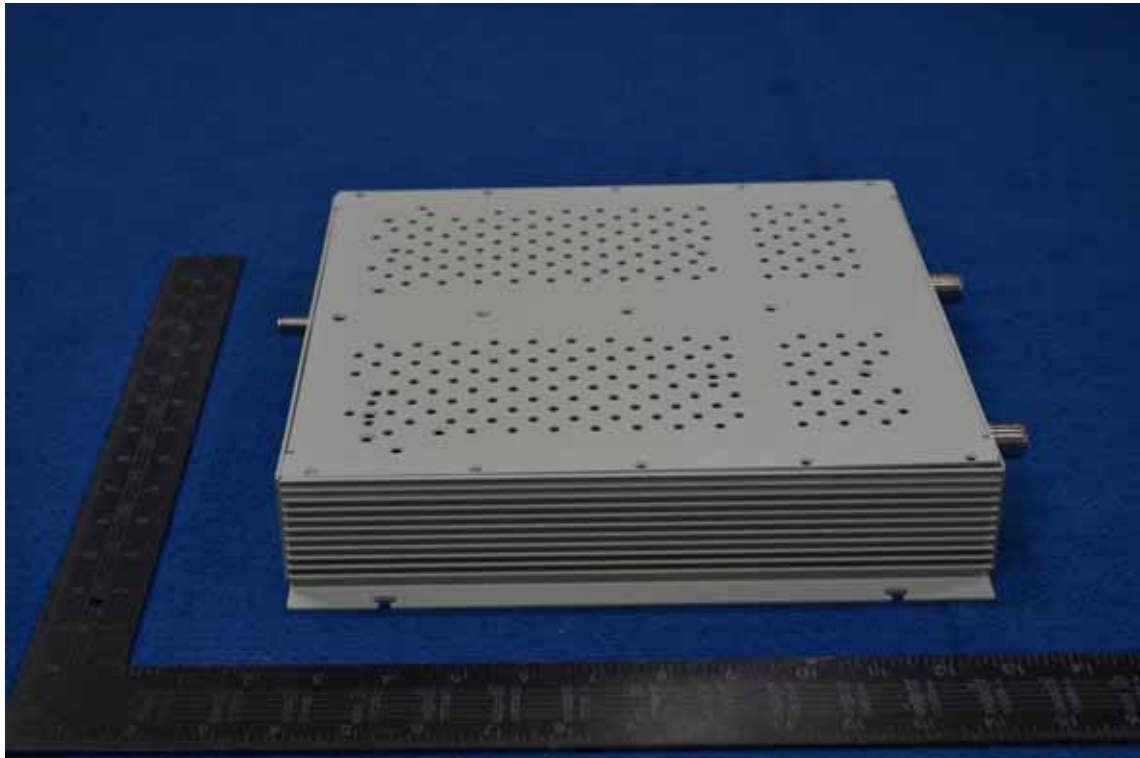
Behind

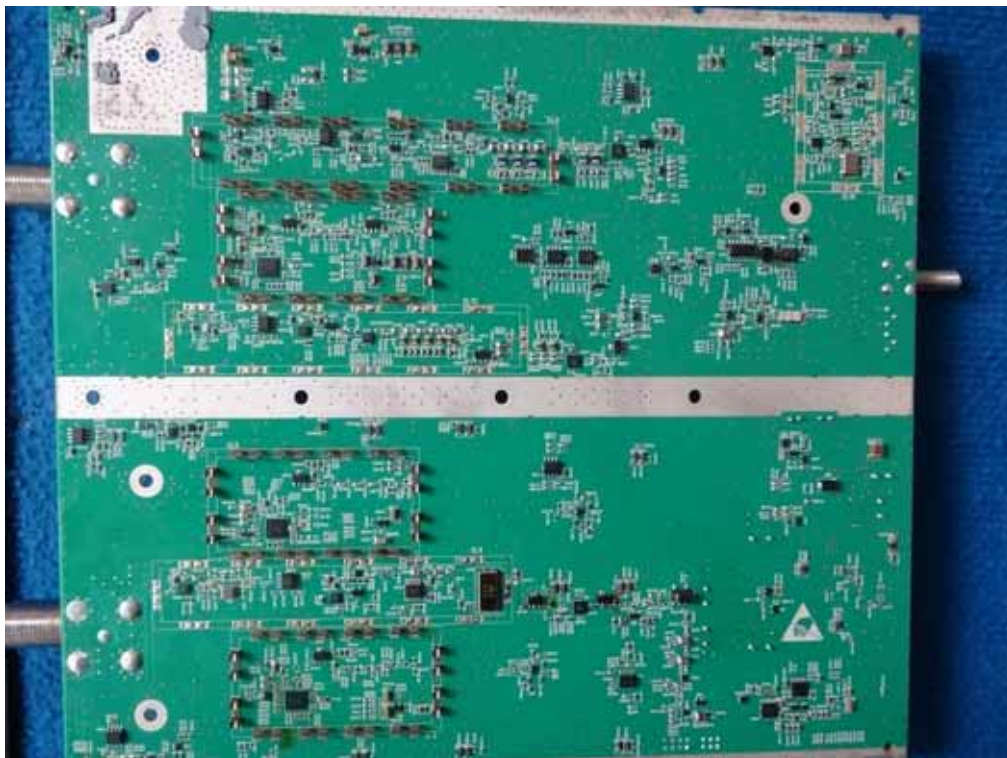


APPENDIX B: PHOTOGRAPHS OF EUT









-----This is the last page of the report. -----