# FCC PART 22H, PART 24E

# FCC PART 27

# MEASUREMENT AND TEST REPORT

For

## QBEX AMERICA LLC

11142 NW 71 Terrace. Doral, FL 33178, United States

**FCC ID: 2AEZN-QBA769PLUS**

| **Report Type:** | **Product Type:** |
|---|---|
| Original Report | Smart phone |

| | |
|---|---|
| **Test Engineer:** | Lion Xiao |
| **Report Number:** | RDG150610005-00C |
| **Report Date:** | 2015-06-26 |
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# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

The *QBEX AMERICA LLC*'s product, model number: *QBA769PLUS (FCC ID: 2AEZN-QBA769PLUS)* (the "EUT") in this report was a *Smart phone*, which was measured approximately: 15.7 cm (L) x 7.7 cm (W) x 0.9 cm (H), rated input voltage: DC 3.7V rechargeable Li-ion battery or DC5V charging from adapter.

*All measurement and test data in this report was gathered from production sample serial number: 150610005 (Assigned by BACL, Dongguan). The EUT was received on 2015-06-10.*

## Objective

This report is prepared on behalf of *QBEX AMERICA LLC* in accordance with: Part 2-Subpart J, Part 22-Subpart H, and Part 24-Subpart E of the Federal Communications Commission's rules.
Part 2, Part 27 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

## Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2AEZN-QBA769PLUS
FCC Part 15C DSS submissions with FCC ID: 2AEZN-QBA769PLUS
FCC Part 15C DTS submissions with FCC ID: 2AEZN-QBA769PLUS

## Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services
Part 27 – Miscellaneous wireless communications services

Applicable Standards: TIA/EIA 603-D-2010.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

# SYSTEM TEST CONFIGURATION

## Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The test items were performed with the EUT operating at testing mode.

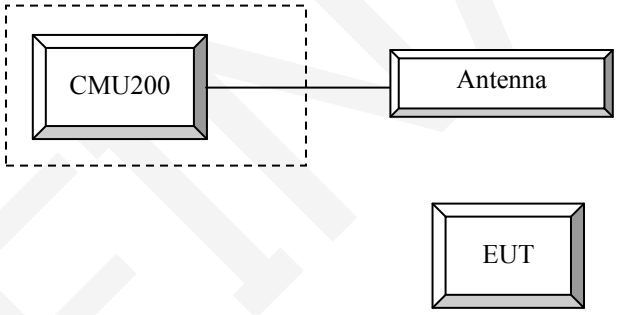
## Equipment Modifications

No modification was made to the EUT.

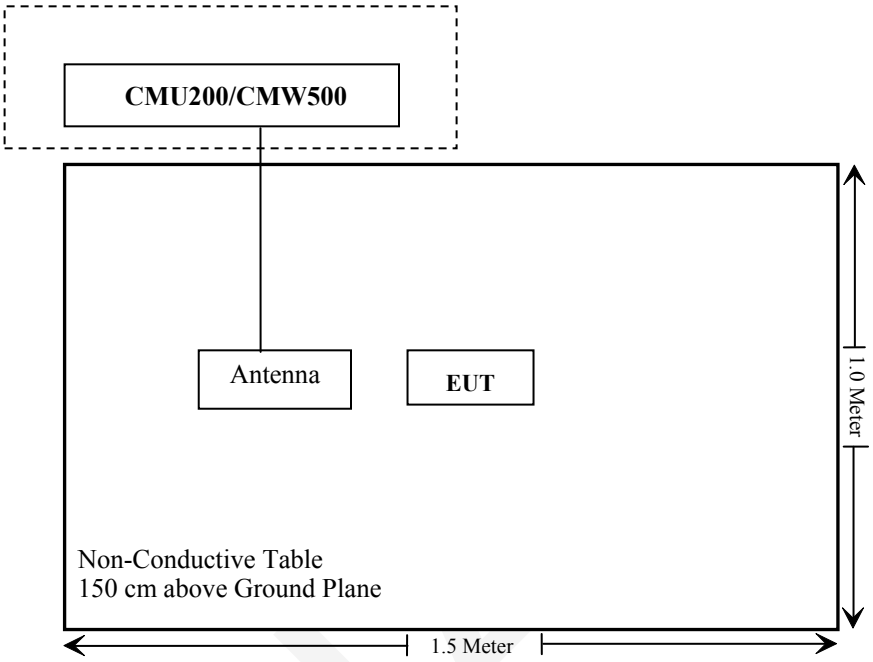
## Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|---|---|---|---|
| R&S | Universal Radio Communication Tester | CMU200 | 109038 |
| R&S | Wideband Radio Communication Tester | CMW500 | 106891 |
| N/A | ANTENNA | N/A | N/A |

## Configuration of Test Setup



## Block Diagram of Test Setup



# SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---|---|---|
| §1.1310, §2.1093 | RF Exposure | Compliance |
| §2.1046;<br>§ 22.913 (a); § 24.232 (c);<br>§27.50 | RF Output Power | Compliance |
| § 2.1047 | Modulation Characteristics | Not Applicable |
| § 2.1049; § 22.905<br>§ 22.917; § 24.238; §27.53 | Occupied Bandwidth | Compliance |
| § 2.1051,<br>§ 22.917 (a); § 24.238 (a);<br>§27.53 | Spurious Emissions at Antenna Terminal | Compliance |
| § 2.1053<br>§ 22.917 (a); § 24.238 (a);<br>§27.53 | Field Strength of Spurious Radiation | Compliance |
| §22.917(a)<br>§24.238(a);§27.53(g)<br>§27.53(h);§27.53(m) | Out of band emission, Band Edge | Compliance |
| § 2.1055<br>§ 22.355; § 24.235; §27.54 | Frequency stability vs. temperature<br>Frequency stability vs. voltage | Compliance |

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# FCC §1.1310 & §2.1093- RF EXPOSURE

## Applicable Standard

FCC§1.1310 and §2.1093.

## Test Result

Compliant, please refer to the SAR report: RDG150610005-20 and RDG150610005-20A.

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# FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E, Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

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# FCC § 2.1046, § 22.913 (a) & § 24.232 (c) & § 27.50 - RF OUTPUT POWER

## Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

According to FCC §2.1046 and §27.50 (c), (10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

According to FCC §2.1046 and §27.50 (d), (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

According to FCC §2.1046 and §27.50 (h), (2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

## Test Procedure

GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
> 27 dBm for EGPRS 850
> 26 dBm for EGPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stabe)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off
P0 > 4 dB
Slot Config > Unchanged (if already set under MS signal)

TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal on to turn on the signal and change settings

**WCDMA-Release 99**

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

| | | |
|---|---|---|
| **WCDMA General Settings** | Loopback Mode | Test Mode 1 |
| | Rel99 RMC | 12.2kbps RMC |
| | Power Control Algorithm | Algorithm2 |
| | **βc / βd** | 8/15 |

**WCDMA HSDPA**

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

| | Mode | HSDPA | HSDPA | HSDPA | HSDPA |
|---|---|---|---|---|---|
| | Subset | 1 | 2 | 3 | 4 |
| WCDMA General Settings | Loopback Mode | Test Mode 1 | | | |
| | Rel99 RMC | 12.2kbps RMC | | | |
| | HSDPA FRC | H-Set1 | | | |
| | Power Control Algorithm | Algorithm2 | | | |
| | βc | 2/15 | 12/15 | 15/15 | 15/15 |
| | βd | 15/15 | 15/15 | 8/15 | 4/15 |
| | βd (SF) | 64 | | | |
| | βc/ βd | 2/15 | 12/15 | 15/8 | 15/4 |
| | βhs | 4/15 | 24/15 | 30/15 | 30/15 |
| | MPR(dB) | 0 | 0 | 0.5 | 0.5 |
| HSDPA Specific Settings | DACK | 8 | | | |
| | DNAK | 8 | | | |
| | DCQI | 8 | | | |
| | Ack-Nack repetition factor | 3 | | | |
| | CQI Feedback | 4ms | | | |
| | CQI Repetition Factor | 2 | | | |
| | Ahs=βhs/ βc | 30/15 | | | |

**WCDMA HSUPA**

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

| | Mode | HSUPA | HSUPA | HSUPA | HSUPA | HSUPA |
|---|---|---|---|---|---|---|
| | **Subset** | **1** | **2** | **3** | **4** | **5** |
| **WCDMA General Settings** | Loopback Mode | Test Mode 1 | | | | |
| | Rel99 RMC | 12.2kbps RMC | | | | |
| | HSDPA FRC | H-Set1 | | | | |
| | HSUPA Test | HSUPA Loopback | | | | |
| | Power Control Algorithm | Algorithm2 | | | | |
| | βc | 11/15 | 6/15 | 15/15 | 2/15 | 15/15 |
| | βd | 15/15 | 15/15 | 9/15 | 15/15 | 0 |
| | βec | 209/225 | 12/15 | 30/15 | 2/15 | 5/15 |
| | βc/ βd | 11/15 | 6/15 | 15/9 | 2/15 | - |
| | βhs | 22/15 | 12/15 | 30/15 | 4/15 | 5/15 |
| | CM(dB) | 1.0 | 3.0 | 2.0 | 3.0 | 1.0 |
| | MPR(dB) | 0 | 2 | 1 | 2 | 0 |
| **HSDPA Specific Settings** | DACK | 8 | | | | |
| | DNAK | 8 | | | | |
| | DCQI | 8 | | | | |
| | Ack-Nack repetition factor | 3 | | | | |
| | CQI Feedback | 4ms | | | | |
| | CQI Repetition Factor | 2 | | | | |
| | Ahs=βhs/ βc | 30/15 | | | | |
| **HSUPA Specific Settings** | DE-DPCCH | 6 | 8 | 8 | 5 | 7 |
| | DHARQ | 0 | 0 | 0 | 0 | 0 |
| | AG Index | 20 | 12 | 15 | 17 | 21 |
| | ETFCI | 75 | 67 | 92 | 71 | 81 |
| | Associated Max UL Data Rate kbps | 242.1 | 174.9 | 482.8 | 205.8 | 308.9 |
| | Reference E_FCIs | E-TFCI 11 E<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO23<br>E-TFCI 75<br>E-TFCI PO26<br>E-TFCI 81<br>E-TFCI PO 27 | | E-TFCI 11<br>E-TFCI PO4<br>E-TFCI 92<br>E-TFCI PO 18 | E-TFCI 11 E<br>E-TFCI PO 4<br>E-TFCI 67<br>E-TFCI PO 18<br>E-TFCI 71<br>E-TFCI PO23<br>E-TFCI 75<br>E-TFCI PO26<br>E-TFCI 81<br>E-TFCI PO 27 | |

**HSPA+**

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

| Sub-test | $\beta_c$ (Note3) | $\beta_d$ | $\beta_{HS}$ (Note1) | $\beta_{ec}$ | $\beta_{ed}$ (2xSF2) (Note 4) | $\beta_{ed}$ (2xSF4) (Note 4) | CM (dB) (Note 2) | MPR (dB) (Note 2) | AG Index (Note 4) | E-TFCI (Note 5) | E-TFCI (boost) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 30/15 | 30/15 | $\beta_{ed}$1: 30/15<br>$\beta_{ed}$2: 30/15 | $\beta_{ed}$3: 24/15<br>$\beta_{ed}$4: 24/15 | 3.5 | 2.5 | 14 | 105 | 105 |

Note 1: $\Delta_{ACK}$, $\Delta_{NACK}$ and $\Delta_{CQI}$ = 30/15 with $\beta_{hs}$ = 30/15 * $\beta_c$.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the $\beta_c$ is set to 1 and $\beta_d$ = 0 by default.
Note 4: $\beta_{ed}$ can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

**DC-HSDPA**

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

**Table C.8.1.12: Fixed Reference Channel H-Set 12**

| Parameter | Unit | Value |
|---|---|---|
| Nominal Avg. Inf. Bit Rate | kbps | 60 |
| Inter-TTI Distance | TTI's | 1 |
| Number of HARQ Processes | Processes | 6 |
| Information Bit Payload ( $N_{INF}$ ) | Bits | 120 |
| Number Code Blocks | Blocks | 1 |
| Binary Channel Bits Per TTI | Bits | 960 |
| Total Available SML's in UE | SML's | 19200 |
| Number of SML's per HARQ Proc. | SML's | 3200 |
| Coding Rate | | 0.15 |
| Number of Physical Channel Codes | Codes | 1 |
| Modulation | | QPSK |

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

**LTE:**

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

| Modulation | Channel bandwidth / Transmission bandwidth (RB) | | | | | | MPR (dB) |
|---|---|---|---|---|---|---|---|
| | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | |
| QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 |
| 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 |
| 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 |

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

**Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)**

| Network Signalling value | Requirements (sub-clause) | E-UTRA Band | Channel bandwidth (MHz) | Resources Blocks ($N_{RB}$) | A-MPR (dB) |
|---|---|---|---|---|---|
| NS_01 | 6.6.2.1.1 | Table 5.5-1 | 1.4, 3, 5, 10, 15, 20 | Table 5.6-1 | NA |
| NS_03 | 6.6.2.2.1 | 2, 4, 10, 23, 25, 35, 36 | 3 | >5 | ≤ 1 |
| | | | 5 | >6 | ≤ 1 |
| | | | 10 | >6 | ≤ 1 |
| | | | 15 | >8 | ≤ 1 |
| | | | 20 | >10 | ≤ 1 |
| NS_04 | 6.6.2.2.2 | 41 | 5 | >6 | ≤ 1 |
| | | | 10, 15, 20 | See Table 6.2.4-4 | |
| NS_05 | 6.6.3.3.1 | 1 | 10,15,20 | ≥ 50 | ≤ 1 |
| NS_06 | 6.6.2.2.3 | 12, 13, 14, 17 | 1.4, 3, 5, 10 | Table 5.6-1 | n/a |
| NS_07 | 6.6.2.2.3<br>6.6.3.3.2 | 13 | 10 | Table 6.2.4-2 | Table 6.2.4-2 |
| NS_08 | 6.6.3.3.3 | 19 | 10, 15 | > 44 | ≤ 3 |
| NS_09 | 6.6.3.3.4 | 21 | 10, 15 | > 40 | ≤ 1 |
| | | | | > 55 | ≤ 2 |
| NS_10 | | 20 | 15, 20 | Table 6.2.4-3 | Table 6.2.4-3 |
| NS_11 | 6.6.2.2.1 | 23[1] | 1.4, 3, 5, 10 | Table 6.2.4-5 | Table 6.2.4-5 |
| .. | | | | | |
| NS_32 | - | - | - | - | - |

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

*Radiated method:*

ANSI/TIA 603-D section 2.2.17

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | EMI Test Receiver | ESCI | 100224 | 2015-05-09 | 2016-05-09 |
| Sunol Sciences | Antenna | JB3 | A060611-3 | 2014-11-06 | 2017-11-05 |
| HP | Amplifier | 8447E | 2434A02181 | 2014-09-01 | 2015-09-01 |
| R&S | Spectrum Analyzer | FSEM | DE31388 | 2015-05-09 | 2016-05-09 |
| ETS LINDGREN | Horn Antenna | 3115 | 000 527 35 | 2012-09-06 | 2015-09-06 |
| Mini-Circuit | Amplifier | ZVA-213-S+ | 054201245 | 2015-02-19 | 2016-02-19 |
| Giga | Signal Generator | 1026 | 320408 | 2015-05-09 | 2016-05-09 |
| EMCO | Adjustable Dipole Antenna | 3121C | 9109-753 | N/A | N/A |
| TDK RF | Horn Antenna | HRN-0118 | 130 084 | 2012-09-06 | 2015-09-06 |

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25.6-25.7°C |
| **Relative Humidity:** | 57 % |
| **ATM Pressure:** | 99.9-100.2kPa |

*The testing was performed by Lion Xiao on 2015-06-15 and 2015-06-18.*

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**Conducted Power**

**Cellular Band (Part 22H) & PCS Band (Part 24E)**

| Band | Channel No. | Peak Output Power (dBm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | GSM | GPRS 1 TX Slot | GPRS 2 TX Slot | GPRS 3 TX Slot | GPRS 4 TX Slot | EDGE 1 TX Slot | EDGE 2 TX Slot | EDGE 3 TX Slot | EDGE 4 TX Slot |
| Cellular | 128 | 32.90 | 32.68 | 31.69 | 30.22 | 29.15 | 26.08 | 24.92 | 22.58 | 21.34 |
| | 190 | 32.80 | 32.57 | 31.56 | 30.13 | 29.08 | 26.15 | 25.01 | 22.69 | 21.47 |
| | 251 | 32.60 | 32.43 | 31.41 | 30.01 | 29.03 | 26.19 | 25.17 | 22.73 | 21.53 |
| PCS | 512 | 29.60 | 28.71 | 27.59 | 27.53 | 26.49 | 25.04 | 23.89 | 22.58 | 21.29 |
| | 661 | 29.60 | 28.96 | 27.75 | 26.79 | 26.65 | 24.63 | 23.41 | 22.04 | 20.86 |
| | 810 | 29.70 | 29.22 | 28.10 | 27.07 | 27.01 | 25.16 | 23.94 | 22.71 | 21.38 |

**WCDMA Band Ⅱ(Part 24E)**

| Mode | 3GPP Sub Test | Average Output Power (dBm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low Channel (Ave. Power) | Low Channel (PAR) | Middle Channel (Ave. Power) | Middle Channel (PAR) | High Channel (Ave. Power) | High Channel (PAR) |
| Rel 99 | 1 | 21.87 | 2.80 | 21.97 | 2.88 | 22.02 | 2.84 |
| HSDPA | 1 | 20.81 | 2.89 | 20.88 | 2.92 | 20.93 | 2.86 |
| | 2 | 20.78 | 2.85 | 20.82 | 2.97 | 20.98 | 2.79 |
| | 3 | 20.75 | 2.78 | 20.89 | 2.94 | 20.84 | 2.81 |
| | 4 | 20.80 | 2.87 | 20.85 | 2.9 | 20.91 | 2.87 |
| HSUPA | 1 | 20.74 | 2.81 | 20.84 | 2.96 | 20.96 | 2.8 |
| | 2 | 20.71 | 2.75 | 20.81 | 2.98 | 20.89 | 2.85 |
| | 3 | 20.77 | 2.86 | 20.86 | 2.84 | 20.87 | 2.78 |
| | 4 | 20.69 | 2.82 | 20.79 | 2.89 | 20.99 | 2.74 |
| | 5 | 20.64 | 2.79 | 20.73 | 2.91 | 20.90 | 2.79 |
| DC-HSDPA | 1 | 20.7 | 2.83 | 20.77 | 2.95 | 20.86 | 2.84 |
| | 2 | 20.73 | 2.85 | 20.80 | 2.88 | 20.82 | 2.76 |
| | 3 | 20.65 | 2.77 | 20.83 | 2.93 | 20.82 | 2.89 |
| | 4 | 20.72 | 2.72 | 20.74 | 2.86 | 20.94 | 2.77 |
| HSPA+ | 1 | 20.66 | 2.76 | 20.78 | 2.83 | 20.88 | 2.82 |

**WCDMA Band Ⅴ(Part 22H)**

| Mode | 3GPP Sub Test | Average Output Power (dBm) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Low Channel (Ave. Power) | Low Channel (PAR) | Middle Channel (Ave. Power) | Middle Channel (PAR) | High Channel (Ave. Power) | High Channel (PAR) |
| Rel 99 | 1 | 22.09 | 2.2 | 22.25 | 2.92 | 22.18 | 2.6 |
| HSDPA | 1 | 20.97 | 2.39 | 21.22 | 2.94 | 21.1 | 2.82 |
| | 2 | 20.92 | 2.34 | 21.26 | 2.9 | 21.06 | 2.89 |
| | 3 | 20.98 | 2.36 | 21.20 | 2.97 | 21.09 | 2.84 |
| | 4 | 20.95 | 2.43 | 21.24 | 2.91 | 21.00 | 2.90 |
| DC-HSDPA | 1 | 21.01 | 2.46 | 21.16 | 2.95 | 21.02 | 2.88 |
| | 2 | 20.94 | 2.40 | 21.21 | 2.99 | 21.13 | 2.85 |
| | 3 | 21.06 | 2.48 | 21.19 | 2.93 | 21.10 | 2.87 |
| | 4 | 21.02 | 2.42 | 21.13 | 2.98 | 21.12 | 2.79 |
| HSUPA | 1 | 21.09 | 2.47 | 21.18 | 2.95 | 21.17 | 2.83 |
| | 2 | 21.05 | 2.38 | 21.15 | 2.92 | 21.14 | 2.86 |
| | 3 | 21.00 | 2.32 | 21.10 | 2.86 | 21.11 | 2.78 |
| | 4 | 21.07 | 2.30 | 21.14 | 2.89 | 21.15 | 2.74 |
| | 5 | 20.99 | 2.37 | 21.11 | 2.85 | 21.08 | 2.71 |
| HSPA+ | 1 | 20.96 | 2.35 | 21.17 | 2.88 | 21.05 | 2.79 |

LTE Band 2 (Part 24E)

| Channel Bandwidth | Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|---|---|---|---|---|---|
| 1.4 MHz | QPSK | 1#0 | 22.79 | 22.98 | 22.65 |
| | | 1#3 | 22.93 | 23.07 | 22.72 |
| | | 1#5 | 22.81 | 23.03 | 22.69 |
| | | 3#0 | 22.21 | 22.37 | 22.01 |
| | | 3#1 | 22.09 | 22.30 | 22.00 |
| | | 3#3 | 22.13 | 22.34 | 22.01 |
| | | 6#0 | 21.77 | 21.99 | 21.61 |
| | 16QAM | 1#0 | 22.17 | 22.39 | 22.04 |
| | | 1#3 | 22.32 | 22.50 | 22.19 |
| | | 1#5 | 22.23 | 22.37 | 22.03 |
| | | 3#0 | 21.49 | 21.69 | 21.29 |
| | | 3#1 | 21.30 | 21.51 | 21.18 |
| | | 3#3 | 21.39 | 21.60 | 21.30 |
| | | 6#0 | 20.90 | 21.04 | 20.70 |
| 3 MHz | QPSK | 1#0 | 22.78 | 22.94 | 22.56 |
| | | 1#7 | 22.86 | 23.02 | 22.62 |
| | | 1#14 | 22.86 | 22.99 | 22.66 |
| | | 8#0 | 22.39 | 22.53 | 22.11 |
| | | 8#4 | 22.39 | 22.60 | 22.34 |
| | | 8#7 | 22.28 | 22.47 | 22.17 |
| | | 15#0 | 21.94 | 22.09 | 21.75 |
| | 16QAM | 1#0 | 22.42 | 22.56 | 22.17 |
| | | 1#7 | 22.48 | 22.61 | 22.23 |
| | | 1#14 | 22.34 | 22.51 | 22.14 |
| | | 8#0 | 21.04 | 21.23 | 20.91 |
| | | 8#4 | 21.23 | 21.39 | 21.13 |
| | | 8#7 | 21.07 | 21.28 | 20.96 |
| | | 15#0 | 20.91 | 21.08 | 20.77 |
| 5 MHz | QPSK | 1#0 | 22.90 | 23.06 | 22.74 |
| | | 1#12 | 22.91 | 23.10 | 22.75 |
| | | 1#24 | 22.81 | 23.01 | 22.62 |
| | | 12#0 | 22.35 | 22.49 | 22.16 |
| | | 12#6 | 22.29 | 22.51 | 22.12 |
| | | 12#11 | 22.30 | 22.43 | 22.03 |
| | | 25#0 | 21.79 | 21.97 | 21.64 |
| | 16QAM | 1#0 | 22.38 | 22.57 | 22.21 |
| | | 1#12 | 22.42 | 22.59 | 22.25 |
| | | 1#24 | 22.37 | 22.51 | 22.25 |
| | | 12#0 | 21.45 | 21.60 | 21.34 |
| | | 12#6 | 21.58 | 21.79 | 21.41 |
| | | 12#11 | 21.52 | 21.71 | 21.40 |
| | | 25#0 | 20.82 | 21.01 | 20.65 |

| Channel Bandwidth | Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|---|---|---|---|---|---|
| 10 MHz | QPSK | 1#0 | 22.58 | 22.71 | 22.35 |
| | | 1#24 | 22.62 | 22.83 | 22.51 |
| | | 1#49 | 22.60 | 22.80 | 22.48 |
| | | 25#0 | 22.05 | 22.26 | 21.90 |
| | | 25#12 | 22.13 | 22.31 | 21.94 |
| | | 25#24 | 22.07 | 22.23 | 21.88 |
| | | 50#0 | 21.67 | 21.83 | 21.40 |
| | 16QAM | 1#0 | 22.02 | 22.19 | 21.90 |
| | | 1#24 | 22.09 | 22.30 | 21.93 |
| | | 1#49 | 22.13 | 22.25 | 21.91 |
| | | 25#0 | 21.41 | 21.58 | 21.19 |
| | | 25#12 | 21.42 | 21.63 | 21.28 |
| | | 25#24 | 21.39 | 21.51 | 21.15 |
| | | 50#0 | 20.77 | 20.92 | 20.61 |
| 15 MHz | QPSK | 1#0 | 22.91 | 23.04 | 22.73 |
| | | 1#37 | 23.00 | 23.16 | 22.86 |
| | | 1#74 | 22.84 | 23.01 | 22.74 |
| | | 36#0 | 22.19 | 22.38 | 22.12 |
| | | 36#17 | 22.32 | 22.45 | 22.10 |
| | | 36#35 | 22.20 | 22.36 | 22.04 |
| | | 75#0 | 21.58 | 21.78 | 21.47 |
| | 16QAM | 1#0 | 22.18 | 22.37 | 22.10 |
| | | 1#37 | 22.26 | 22.42 | 22.06 |
| | | 1#74 | 22.12 | 22.30 | 21.96 |
| | | 36#0 | 21.37 | 21.49 | 21.24 |
| | | 36#17 | 21.38 | 21.58 | 21.26 |
| | | 36#35 | 21.26 | 21.40 | 21.04 |
| | | 75#0 | 20.72 | 20.93 | 20.63 |
| 20 MHz | QPSK | 1#0 | 22.65 | 22.80 | 22.47 |
| | | 1#49 | 22.57 | 22.73 | 22.47 |
| | | 1#99 | 22.66 | 22.87 | 22.50 |
| | | 50#0 | 21.91 | 22.09 | 21.72 |
| | | 50#24 | 21.86 | 22.07 | 21.73 |
| | | 50#49 | 21.80 | 22.02 | 21.70 |
| | | 100#0 | 21.44 | 21.64 | 21.32 |
| | 16QAM | 1#0 | 21.88 | 22.02 | 21.62 |
| | | 1#49 | 21.95 | 22.14 | 21.87 |
| | | 1#99 | 21.94 | 22.07 | 21.77 |
| | | 50#0 | 21.13 | 21.29 | 21.04 |
| | | 50#24 | 21.12 | 21.31 | 20.99 |
| | | 50#49 | 21.03 | 21.23 | 20.90 |
| | | 100#0 | 20.66 | 20.80 | 20.41 |

**LTE Band 4 (Part 27)**

| Channel Bandwidth | Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|---|---|---|---|---|---|
| 1.4 MHz | QPSK | 1#0 | 22.76 | 22.56 | 22.32 |
| | | 1#3 | 22.58 | 22.37 | 22.23 |
| | | 1#5 | 22.77 | 22.51 | 22.31 |
| | | 3#0 | 22.68 | 22.49 | 22.31 |
| | | 3#1 | 22.55 | 22.34 | 22.19 |
| | | 3#3 | 22.58 | 22.45 | 22.28 |
| | | 6#0 | 21.76 | 21.47 | 21.28 |
| | 16QAM | 1#0 | 21.86 | 21.63 | 21.46 |
| | | 1#3 | 21.71 | 21.49 | 21.29 |
| | | 1#5 | 21.90 | 21.60 | 21.48 |
| | | 3#0 | 21.81 | 21.56 | 21.39 |
| | | 3#1 | 21.65 | 21.53 | 21.29 |
| | | 3#3 | 21.82 | 21.59 | 21.51 |
| | | 6#0 | 20.88 | 20.62 | 20.55 |
| 3 MHz | QPSK | 1#0 | 22.62 | 22.37 | 22.17 |
| | | 1#7 | 22.34 | 22.16 | 22.01 |
| | | 1#14 | 22.57 | 22.30 | 22.07 |
| | | 8#0 | 22.45 | 22.17 | 21.97 |
| | | 8#4 | 22.33 | 22.11 | 21.88 |
| | | 8#7 | 22.31 | 22.13 | 21.97 |
| | | 15#0 | 21.61 | 21.42 | 21.30 |
| | 16QAM | 1#0 | 22.20 | 21.97 | 21.78 |
| | | 1#7 | 21.97 | 21.85 | 21.65 |
| | | 1#14 | 22.02 | 21.90 | 21.74 |
| | | 8#0 | 21.60 | 21.37 | 21.22 |
| | | 8#4 | 21.49 | 21.31 | 21.16 |
| | | 8#7 | 21.48 | 21.33 | 21.19 |
| | | 15#0 | 20.76 | 20.55 | 20.41 |
| 5 MHz | QPSK | 1#0 | 22.58 | 22.46 | 22.37 |
| | | 1#12 | 22.60 | 22.40 | 22.30 |
| | | 1#24 | 22.83 | 22.57 | 22.41 |
| | | 12#0 | 22.08 | 21.97 | 21.88 |
| | | 12#6 | 22.08 | 21.91 | 21.67 |
| | | 12#11 | 22.16 | 21.98 | 21.83 |
| | | 25#0 | 21.51 | 21.40 | 21.26 |
| | 16QAM | 1#0 | 21.73 | 21.52 | 21.35 |
| | | 1#12 | 21.47 | 21.32 | 21.11 |
| | | 1#24 | 21.58 | 21.46 | 21.27 |
| | | 12#0 | 21.26 | 21.15 | 21.07 |
| | | 12#6 | 21.31 | 21.07 | 20.89 |
| | | 12#11 | 21.23 | 21.11 | 21.04 |
| | | 25#0 | 20.85 | 20.66 | 20.41 |

| Channel Bandwidth | Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|---|---|---|---|---|---|
| 10 MHz | QPSK | 1#0 | 22.16 | 22.05 | 21.94 |
| | | 1#24 | 22.27 | 22.02 | 21.82 |
| | | 1#49 | 22.37 | 22.14 | 22.00 |
| | | 25#0 | 21.92 | 21.73 | 21.54 |
| | | 25#12 | 22.04 | 21.79 | 21.53 |
| | | 25#24 | 22.04 | 21.87 | 21.66 |
| | | 50#0 | 21.34 | 21.19 | 21.03 |
| | 16QAM | 1#0 | 21.71 | 21.53 | 21.36 |
| | | 1#24 | 21.56 | 21.39 | 21.24 |
| | | 1#49 | 21.68 | 21.48 | 21.39 |
| | | 25#0 | 21.11 | 21.01 | 20.87 |
| | | 25#12 | 21.09 | 20.94 | 20.78 |
| | | 25#24 | 21.27 | 21.08 | 20.96 |
| | | 50#0 | 20.47 | 20.26 | 20.12 |
| 15 MHz | QPSK | 1#0 | 22.13 | 21.94 | 21.68 |
| | | 1#37 | 22.18 | 21.98 | 21.72 |
| | | 1#74 | 22.07 | 21.90 | 21.81 |
| | | 36#0 | 21.78 | 21.57 | 21.33 |
| | | 36#17 | 21.63 | 21.52 | 21.36 |
| | | 36#35 | 21.74 | 21.63 | 21.53 |
| | | 75#0 | 21.10 | 20.90 | 20.78 |
| | 16QAM | 1#0 | 21.53 | 21.27 | 21.09 |
| | | 1#37 | 21.38 | 21.23 | 21.13 |
| | | 1#74 | 21.55 | 21.36 | 21.22 |
| | | 36#0 | 20.98 | 20.87 | 20.64 |
| | | 36#17 | 20.95 | 20.80 | 20.57 |
| | | 36#35 | 21.08 | 20.93 | 20.80 |
| | | 75#0 | 20.23 | 20.02 | 19.81 |
| 20 MHz | QPSK | 1#0 | 21.95 | 21.79 | 21.64 |
| | | 1#49 | 22.04 | 21.84 | 21.72 |
| | | 1#99 | 22.10 | 21.91 | 21.69 |
| | | 50#0 | 21.55 | 21.35 | 21.22 |
| | | 50#24 | 21.39 | 21.26 | 21.06 |
| | | 50#49 | 21.57 | 21.41 | 21.20 |
| | | 100#0 | 20.90 | 20.66 | 20.48 |
| | 16QAM | 1#0 | 21.24 | 21.04 | 20.78 |
| | | 1#49 | 21.37 | 21.15 | 21.05 |
| | | 1#99 | 21.20 | 21.09 | 20.90 |
| | | 50#0 | 20.91 | 20.67 | 20.48 |
| | | 50#24 | 21.74 | 21.55 | 21.31 |
| | | 50#49 | 21.81 | 21.61 | 21.53 |
| | | 100#0 | 19.97 | 19.83 | 19.63 |

**LTE Band 7 (Part 27)**

| Channel Bandwidth | Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|---|---|---|---|---|---|
| 5 MHz | QPSK | 1#0 | 22.61 | 22.83 | 22.40 |
| | | 1#12 | 22.57 | 22.85 | 22.35 |
| | | 1#24 | 22.55 | 22.79 | 22.25 |
| | | 12#0 | 21.90 | 22.16 | 21.71 |
| | | 12#6 | 21.96 | 22.23 | 21.71 |
| | | 12#11 | 21.89 | 22.10 | 21.62 |
| | | 25#0 | 21.52 | 21.78 | 21.28 |
| | 16QAM | 1#0 | 21.43 | 21.69 | 21.17 |
| | | 1#12 | 21.42 | 21.63 | 21.18 |
| | | 1#24 | 21.44 | 21.67 | 21.22 |
| | | 12#0 | 20.98 | 21.19 | 20.66 |
| | | 12#6 | 20.91 | 21.10 | 20.68 |
| | | 12#11 | 21.02 | 21.24 | 20.79 |
| | | 25#0 | 20.61 | 20.84 | 20.35 |
| 10 MHz | QPSK | 1#0 | 22.65 | 22.86 | 22.43 |
| | | 1#24 | 22.74 | 22.93 | 22.42 |
| | | 1#49 | 22.56 | 22.79 | 22.29 |
| | | 25#0 | 21.85 | 22.05 | 21.52 |
| | | 25#12 | 21.90 | 22.13 | 21.72 |
| | | 25#24 | 21.90 | 22.09 | 21.65 |
| | | 50#0 | 21.64 | 21.84 | 21.44 |
| | 16QAM | 1#0 | 21.93 | 22.19 | 21.82 |
| | | 1#24 | 21.98 | 22.24 | 21.70 |
| | | 1#49 | 21.91 | 22.13 | 21.65 |
| | | 25#0 | 21.15 | 21.34 | 20.80 |
| | | 25#12 | 21.09 | 21.30 | 20.82 |
| | | 25#24 | 21.16 | 21.39 | 20.97 |
| | | 50#0 | 20.59 | 20.82 | 20.37 |
| 15 MHz | QPSK | 1#0 | 22.70 | 22.93 | 22.52 |
| | | 1#37 | 22.65 | 22.90 | 22.49 |
| | | 1#74 | 22.63 | 22.87 | 22.36 |
| | | 36#0 | 21.77 | 22.03 | 21.58 |
| | | 36#17 | 21.73 | 21.99 | 21.50 |
| | | 36#35 | 21.82 | 22.07 | 21.64 |
| | | 75#0 | 21.52 | 21.80 | 21.27 |
| | 16QAM | 1#0 | 21.99 | 22.19 | 21.76 |
| | | 1#37 | 21.99 | 22.23 | 21.81 |
| | | 1#74 | 21.92 | 22.14 | 21.72 |
| | | 36#0 | 21.25 | 21.49 | 21.05 |
| | | 36#17 | 21.38 | 21.58 | 21.12 |
| | | 36#35 | 21.20 | 21.43 | 20.90 |
| | | 75#0 | 20.70 | 20.92 | 20.47 |

| Channel Bandwidth | Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|---|---|---|---|---|---|
| 20 MHz | QPSK | 1#0 | 22.62 | 22.83 | 22.32 |
| | | 1#49 | 22.67 | 22.90 | 22.46 |
| | | 1#99 | 22.58 | 22.79 | 22.26 |
| | | 50#0 | 21.54 | 21.74 | 21.24 |
| | | 50#24 | 21.60 | 21.83 | 21.37 |
| | | 50#49 | 21.55 | 21.80 | 21.33 |
| | | 100#0 | 21.75 | 21.95 | 21.52 |
| | 16QAM | 1#0 | 21.84 | 22.03 | 21.61 |
| | | 1#49 | 21.83 | 22.10 | 21.70 |
| | | 1#99 | 21.79 | 22.02 | 21.59 |
| | | 50#0 | 21.01 | 21.29 | 20.83 |
| | | 50#24 | 21.16 | 21.36 | 20.89 |
| | | 50#49 | 21.12 | 21.40 | 20.89 |
| | | 100#0 | 20.65 | 20.89 | 20.39 |

FINAL

**LTE Band 17 (Part 27)**

| Channel Bandwidth | Modulation | Resource Block & RB offset | Low Channel (dBm) | Middle Channel (dBm) | High Channel (dBm) |
|---|---|---|---|---|---|
| 5 MHz | QPSK | 1#0 | 22.44 | 22.69 | 22.33 |
| | | 1#12 | 22.53 | 22.73 | 22.43 |
| | | 1#24 | 22.62 | 22.84 | 22.48 |
| | | 12#0 | 21.97 | 22.17 | 21.92 |
| | | 12#6 | 21.97 | 22.23 | 21.82 |
| | | 12#11 | 21.91 | 22.12 | 21.82 |
| | | 25#0 | 21.41 | 21.62 | 21.27 |
| | 16QAM | 1#0 | 21.54 | 21.79 | 21.41 |
| | | 1#12 | 21.39 | 21.67 | 21.39 |
| | | 1#24 | 21.46 | 21.70 | 21.47 |
| | | 12#0 | 20.78 | 21.06 | 20.82 |
| | | 12#6 | 20.96 | 21.17 | 20.82 |
| | | 12#11 | 20.78 | 21.03 | 20.74 |
| | | 25#0 | 20.61 | 20.85 | 20.51 |
| 10 MHz | QPSK | 1#0 | 22.61 | 22.86 | 22.59 |
| | | 1#24 | 22.51 | 22.78 | 22.51 |
| | | 1#49 | 22.65 | 22.84 | 22.59 |
| | | 25#0 | 21.78 | 22.03 | 21.73 |
| | | 25#12 | 21.95 | 22.16 | 21.81 |
| | | 25#24 | 21.81 | 22.09 | 21.81 |
| | | 50#0 | 21.56 | 21.74 | 21.47 |
| | 16QAM | 1#0 | 21.86 | 22.06 | 21.75 |
| | | 1#24 | 21.71 | 21.97 | 21.67 |
| | | 1#49 | 21.77 | 21.96 | 21.61 |
| | | 25#0 | 21.35 | 21.57 | 21.19 |
| | | 25#12 | 21.39 | 21.61 | 21.28 |
| | | 25#24 | 21.25 | 21.50 | 21.18 |
| | | 50#0 | 20.76 | 20.97 | 20.58 |

Note: peak-to-average ratio (PAR) <13 dB.

**PAR (LTE Band 2)**

| Test Modulation | | Channel Bandwidth | Low Channel PAR (dB) | Middle Channel PAR (dB) | High Channel PAR (dB) | Limit (dB) |
|---|---|---|---|---|---|---|
| QPSK | 1 RB | 20 MHz | 4.04 | 5.6 | 4.56 | 13 |
| | 100 RB | | 7.04 | 6.4 | 6.2 | 13 |
| 16QAM | 1 RB | 20 MHz | 4.56 | 5.92 | 5.48 | 13 |
| | 100 RB | | 6.28 | 7.28 | 7 | 13 |

**PAR (LTE Band 4)**

| Test Modulation | | Channel Bandwidth | Low Channel PAR (dB) | Middle Channel PAR (dB) | High Channel PAR (dB) | Limit (dB) |
|---|---|---|---|---|---|---|
| QPSK | 1 RB | 20 MHz | 4 | 4.96 | 5.04 | 13 |
| | 100 RB | | 6.28 | 6.28 | 6.4 | 13 |
| 16QAM | 1 RB | 20 MHz | 5.32 | 5.8 | 5.32 | 13 |
| | 100 RB | | 7.08 | 7.16 | 7.2 | 13 |

**PAR (LTE Band 7)**

| Test Modulation | | Channel Bandwidth | Low Channel PAR (dB) | Middle Channel PAR (dB) | High Channel PAR (dB) | Limit (dB) |
|---|---|---|---|---|---|---|
| QPSK | 1 RB | 20 MHz | 3.16 | 3.40 | 3.72 | 13 |
| | 100 RB | | 6.28 | 6.48 | 6.40 | 13 |
| 16QAM | 1 RB | 20 MHz | 3.96 | 4.40 | 4.88 | 13 |
| | 100 RB | | 6.96 | 7.20 | 7.12 | 13 |

**PAR (LTE Band 17)**

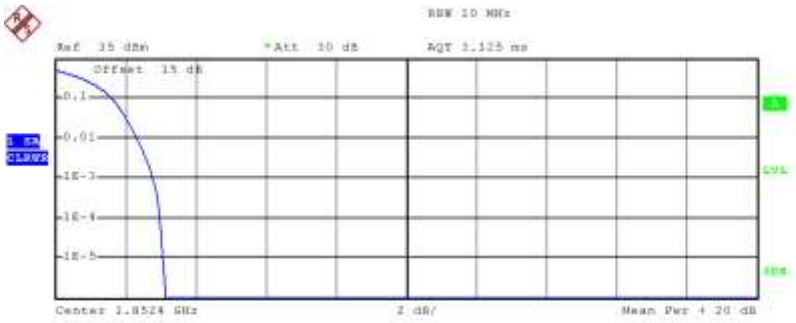
| Test Modulation | | Channel Bandwidth | Low Channel PAR (dB) | Middle Channel PAR (dB) | High Channel PAR (dB) | Limit (dB) |
|---|---|---|---|---|---|---|
| QPSK | 1 RB | 10 MHz | 5.88 | 5.24 | 4.88 | 13 |
| | 100 RB | | 5.96 | 5.92 | 5.84 | 13 |
| 16QAM | 1 RB | 10 MHz | 7.04 | 6.40 | 5.88 | 13 |
| | 100 RB | | 6.96 | 6.84 | 6.88 | 13 |

Note: peak-to-average ratio (PAR) <13 dB.

Peak-to-average ratio (PAR)

**WCDMA Band Ⅱ(Part 24E)**

**Low Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.83 dBm |
| Peak | 24.97 dBm |
| Crest | 3.14 dB |
| 10 % | 1.64 dB |
| 1 % | 2.36 dB |
| .1 % | 2.80 dB |
| .01 % | 3.00 dB |

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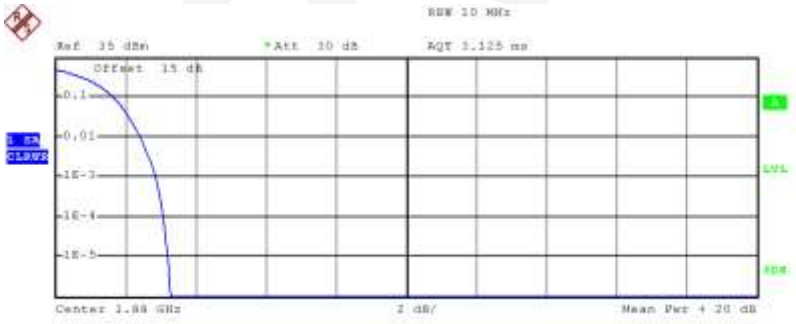
**Middle Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.18 dBm |
| Peak | 24.46 dBm |
| Crest | 3.29 dB |
| 10 % | 1.68 dB |
| 1 % | 2.44 dB |
| .1 % | 2.88 dB |
| .01 % | 3.08 dB |

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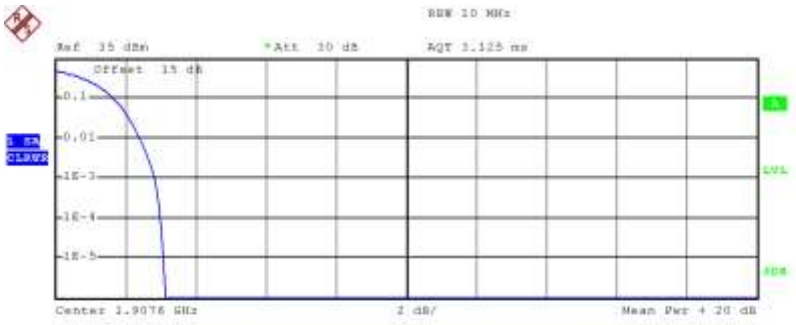
**High Channel**




Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.77 dBm |
| Peak | 24.90 dBm |
| Crest | 3.13 dB |
| 10 % | 1.68 dB |
| 1 % | 2.44 dB |
| .1 % | 2.84 dB |
| .01 % | 3.00 dB |

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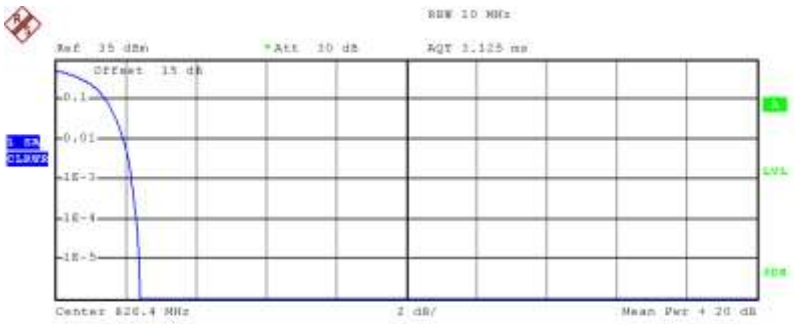
**WCDMA Band Ⅴ(Part 22H)**

**Low Channel**

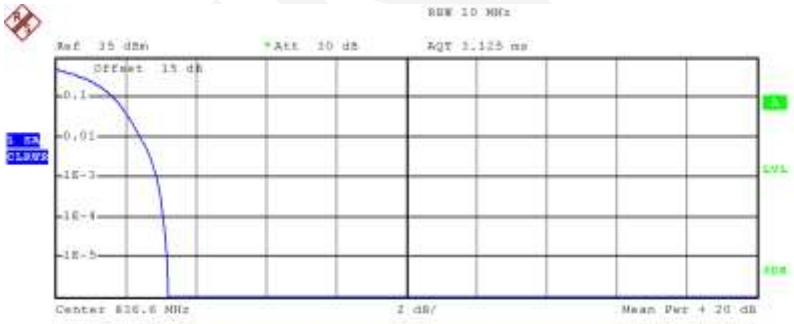



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.23 dBm |
| Peak | 24.64 dBm |
| Crest | 2.41 dB |
| 10 % | 1.48 dB |
| 1 % | 1.96 dB |
| .1 % | 2.20 dB |
| .01 % | 2.32 dB |

Date: 15.JUN.2015 13:10:03

**Middle Channel**

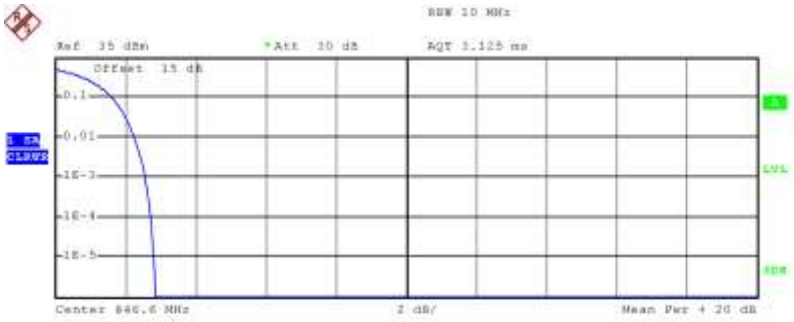



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.34 dBm |
| Peak | 24.56 dBm |
| Crest | 3.22 dB |
| 10 % | 1.68 dB |
| 1 % | 2.44 dB |
| .1 % | 2.92 dB |
| .01 % | 3.08 dB |

Date: 15.JUN.2015 13:09:27

**High Channel**



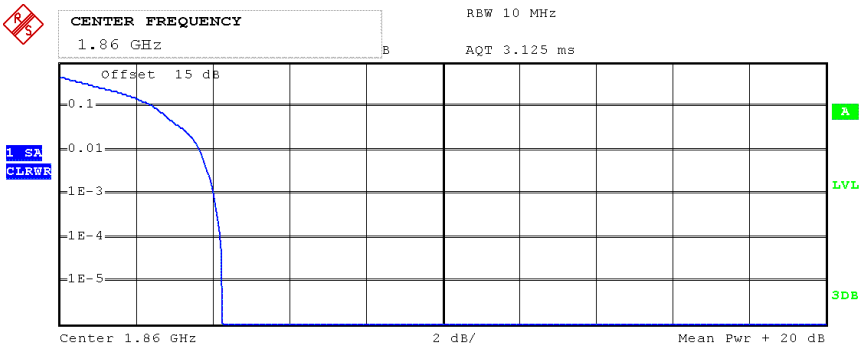

Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.12 dBm |
| Peak | 24.99 dBm |
| Crest | 2.87 dB |
| 10 % | 1.64 dB |
| 1 % | 2.28 dB |
| .1 % | 2.60 dB |
| .01 % | 2.72 dB |

Date: 15.JUN.2015 13:10:17

## LTE Band 2 (PART 27)

### QPSK_20MHz_1RB_Low Channel

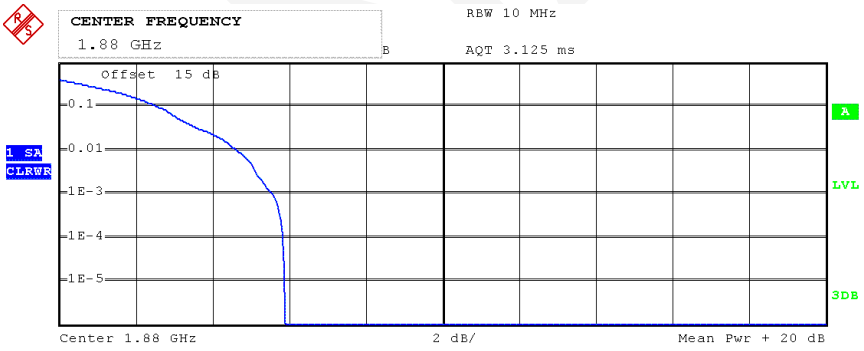



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.64 dBm |
| Peak | 26.90 dBm |
| Crest | 4.26 dB |
| 10% @ | 2.52 dB |
| 1% @ | 3.68 dB |
| .1% @ | 4.04 dB |

Date: 18.JUN.2015 22:55:22

### QPSK_20MHz_1RB Middle Channel

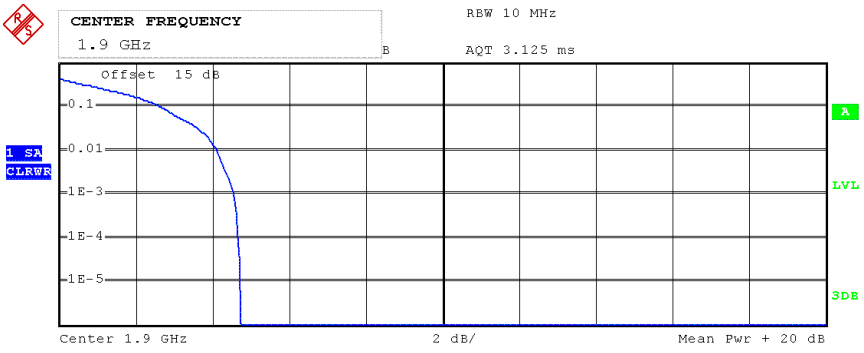



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.95 dBm |
| Peak | 27.83 dBm |
| Crest | 5.88 dB |
| 10% @ | 2.64 dB |
| 1% @ | 4.68 dB |
| .1% @ | 5.60 dB |

Date: 18.JUN.2015 22:57:03

## QPSK_20MHz_1RB High Channel

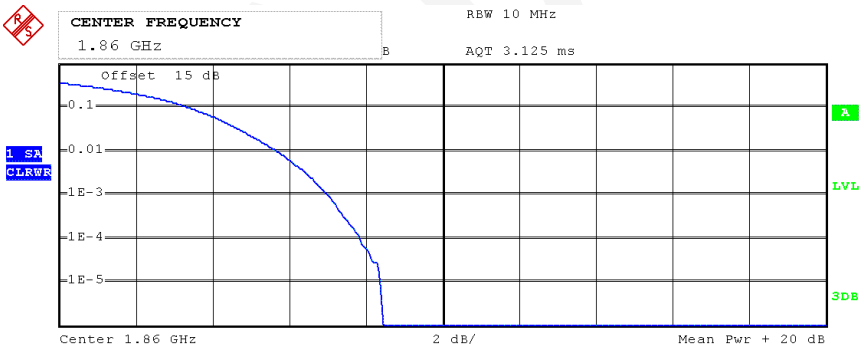



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 22.54 dBm |
| Peak | 27.27 dBm |
| Crest | 4.74 dB |
| 10% @ | 2.72 dB |
| 1% @ | 4.12 dB |
| .1% @ | 4.56 dB |

Date: 18.JUN.2015 22:57:38

## QPSK_20MHz_FULL RB Low Channel

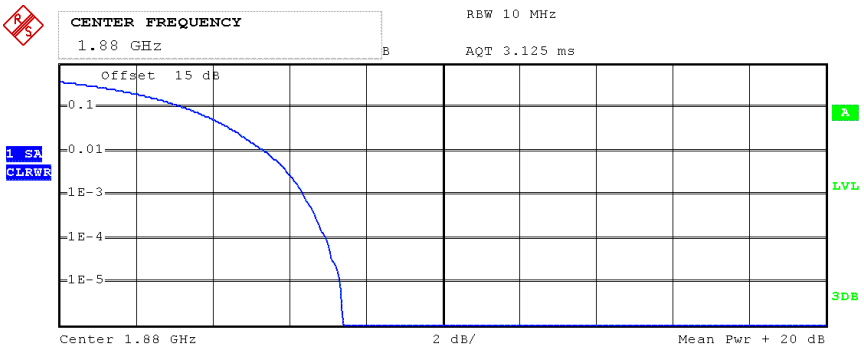



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.82 dBm |
| Peak | 29.26 dBm |
| Crest | 8.45 dB |
| 10% @ | 3.48 dB |
| 1% @ | 5.72 dB |
| .1% @ | 7.04 dB |

Date: 18.JUN.2015 22:53:26

## QPSK_20MHz_FULL RB Middle Channel

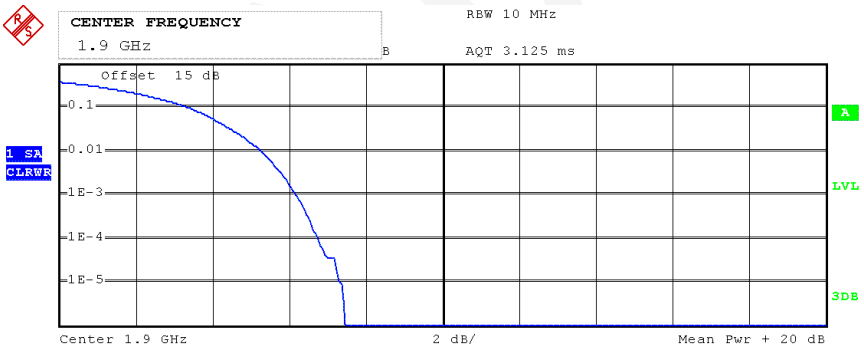



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.17 dBm |
| Peak | 27.57 dBm |
| Crest | 7.40 dB |
| 10% @ | 3.36 dB |
| 1% @ | 5.40 dB |
| .1% @ | 6.40 dB |

Date: 18.JUN.2015 22:50:34

## QPSK 20MHz_FULL RB High Channel

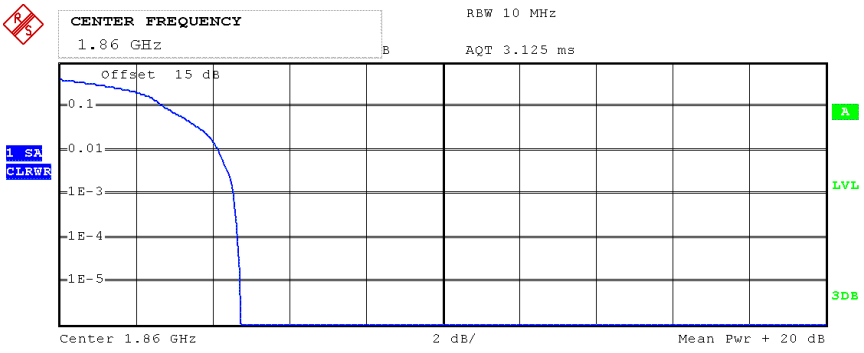



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.26 dBm |
| Peak | 27.71 dBm |
| Crest | 7.45 dB |
| 10% @ | 3.44 dB |
| 1% @ | 5.28 dB |
| .1% @ | 6.20 dB |

Date: 18.JUN.2015 22:52:48

## 16QAM_20MHz_1RB_Low Channel

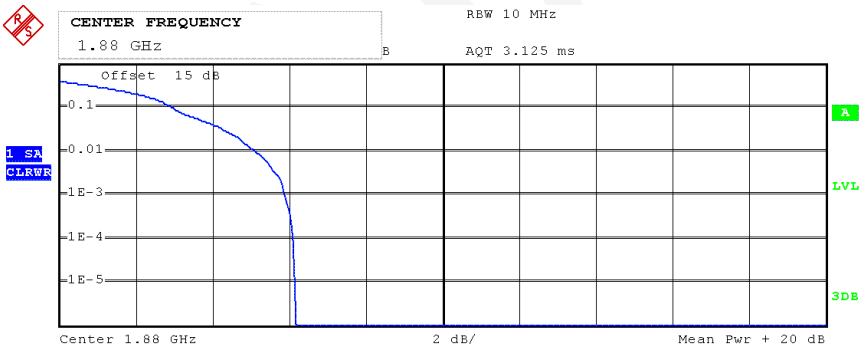



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 21.81 dBm |
| Peak | 26.54 dBm |
| Crest | 4.73 dB |
| 10% @ | 2.80 dB |
| 1% @ | 4.20 dB |
| .1% @ | 4.56 dB |

Date: 18.JUN.2015 22:55:39

## 16QAM 20MHz_1RB Middle Channel

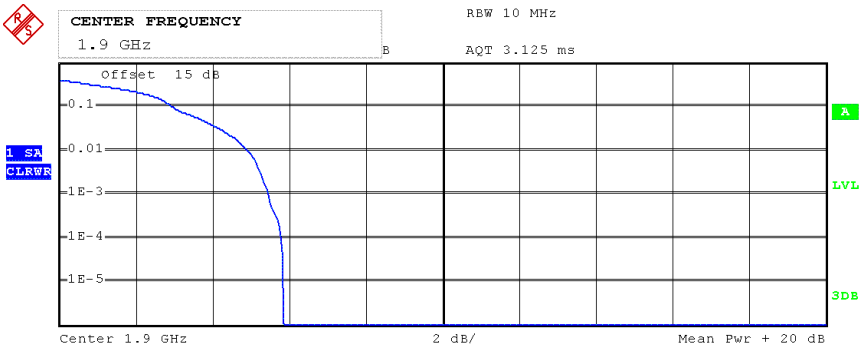



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 21.11 dBm |
| Peak | 27.26 dBm |
| Crest | 6.15 dB |
| 10% @ | 3.00 dB |
| 1% @ | 5.16 dB |
| .1% @ | 5.92 dB |

Date: 18.JUN.2015 22:56:25

## 16QAM 20MHz_1RB High Channel

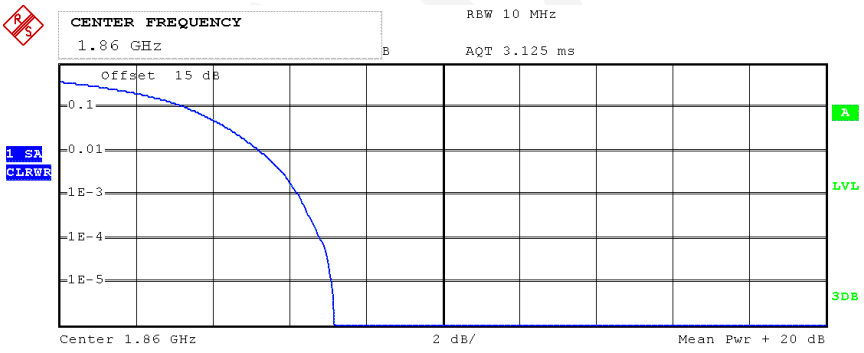



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 21.76 dBm |
| Peak | 27.63 dBm |
| Crest | 5.87 dB |
| 10% @ | 3.00 dB |
| 1% @ | 4.96 dB |
| .1% @ | 5.48 dB |

Date: 18.JUN.2015 22:57:49

## 16QAM 20MHz_FULL RB Low Channel

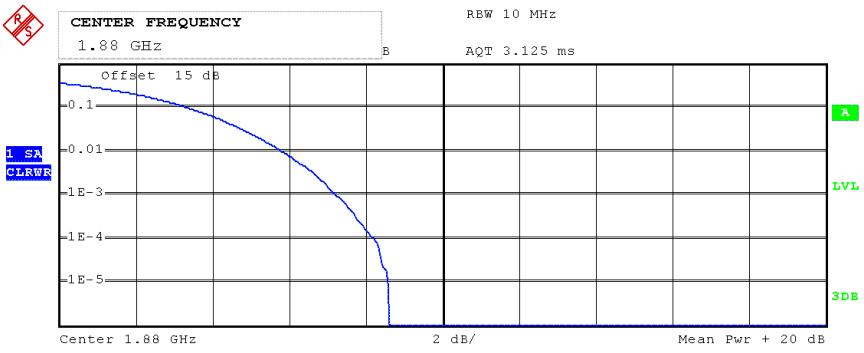



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.80 dBm |
| Peak | 26.98 dBm |
| Crest | 7.18 dB |
| 10% @ | 3.40 dB |
| 1% @ | 5.28 dB |
| .1% @ | 6.28 dB |

Date: 18.JUN.2015 22:53:55

## 16QAM 20MHz_FULL RB Middle Channel

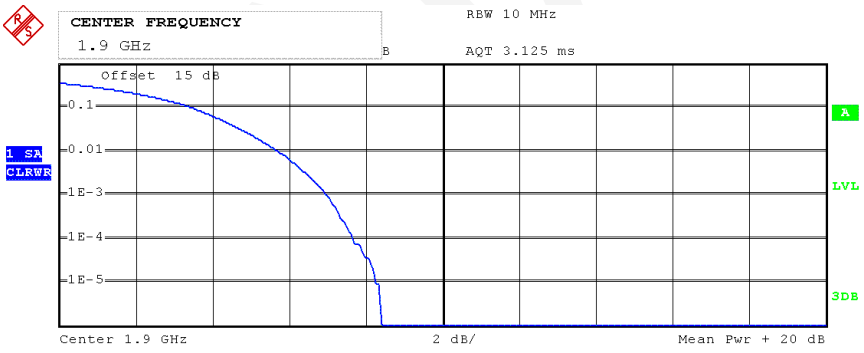



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.23 dBm |
| Peak | 27.85 dBm |
| Crest | 8.62 dB |
| 10% @ | 3.44 dB |
| 1% @ | 5.88 dB |
| .1% @ | 7.28 dB |

Date: 18.JUN.2015 22:50:56

## 16QAM 20MHz_FULL RB High Channel



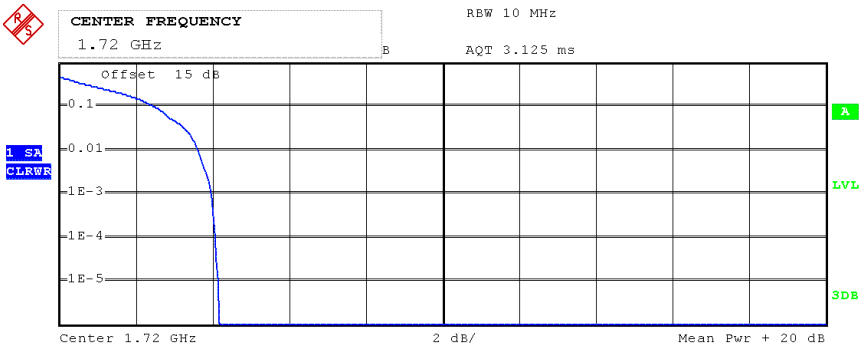

Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.44 dBm |
| Peak | 27.85 dBm |
| Crest | 8.41 dB |
| 10% @ | 3.56 dB |
| 1% @ | 5.76 dB |
| .1% @ | 7.00 dB |

Date: 18.JUN.2015 22:52:58

## LTE Band 4 (PART 27)

### QPSK_20MHz_1RB_Low Channel

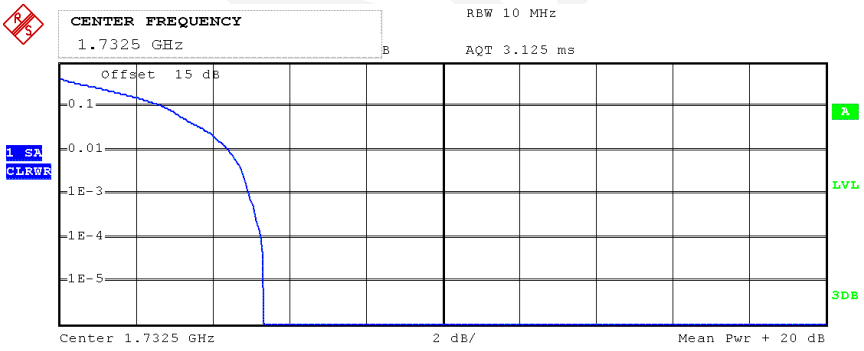



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 23.07 dBm |
| Peak | 27.25 dBm |
| Crest | 4.18 dB |
| 10% @ | 2.56 dB |
| 1% @ | 3.64 dB |
| .1% @ | 4.00 dB |

Date: 18.JUN.2015 22:38:32

### QPSK_20MHz_1RB Middle Channel

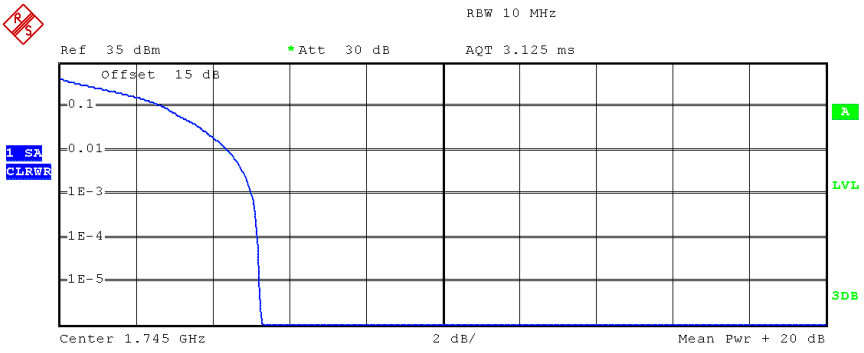



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 22.54 dBm |
| Peak | 27.88 dBm |
| Crest | 5.35 dB |
| 10% @ | 2.80 dB |
| 1% @ | 4.44 dB |
| .1% @ | 4.96 dB |

Date: 18.JUN.2015 22:38:07

## QPSK_20MHz_1RB High Channel

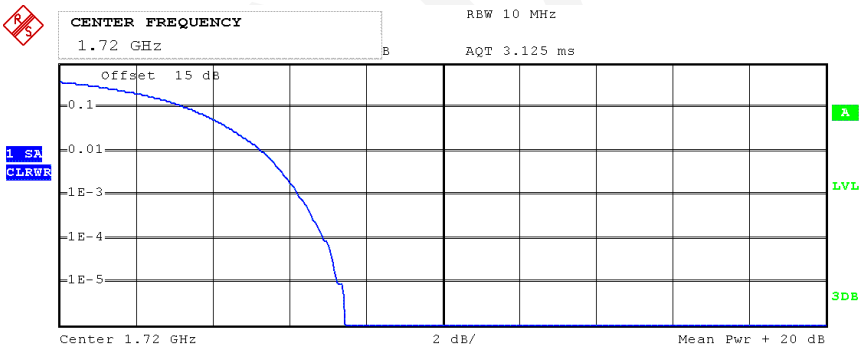



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.25 dBm |
| Peak | 27.53 dBm |
| Crest | 5.28 dB |
| 10% @ | 2.76 dB |
| 1% @ | 4.44 dB |
| .1% @ | 5.04 dB |

Date: 18.JUN.2015 22:37:10

## QPSK_20MHz_FULL RB Low Channel

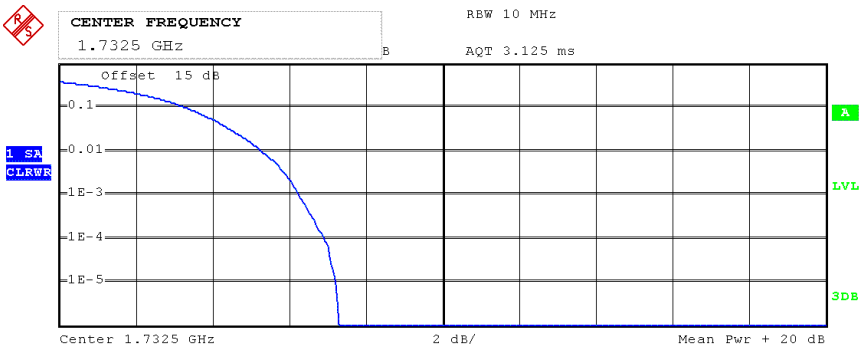



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 20.42 dBm |
| Peak | 27.88 dBm |
| Crest | 7.47 dB |
| 10% @ | 3.40 dB |
| 1% @ | 5.32 dB |
| .1% @ | 6.28 dB |

Date: 18.JUN.2015 22:39:56

## QPSK_20MHz_FULL RB Middle Channel

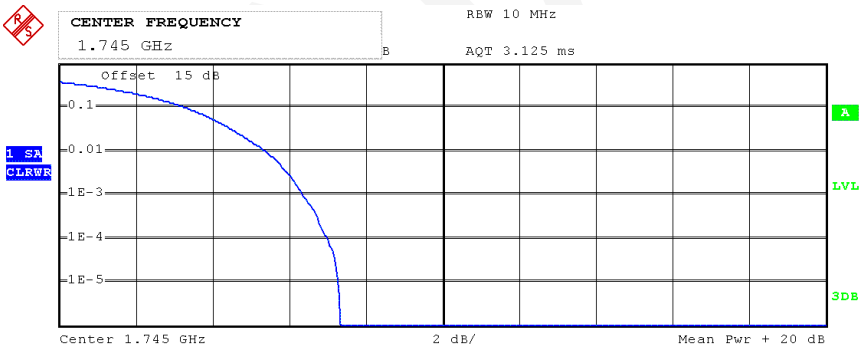



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.38 dBm |
| Peak | 27.67 dBm |
| Crest | 7.29 dB |
| 10% @ | 3.40 dB |
| 1% @ | 5.32 dB |
| .1% @ | 6.28 dB |

Date: 18.JUN.2015 22:40:41

## QPSK 20MHz_FULL RB High Channel

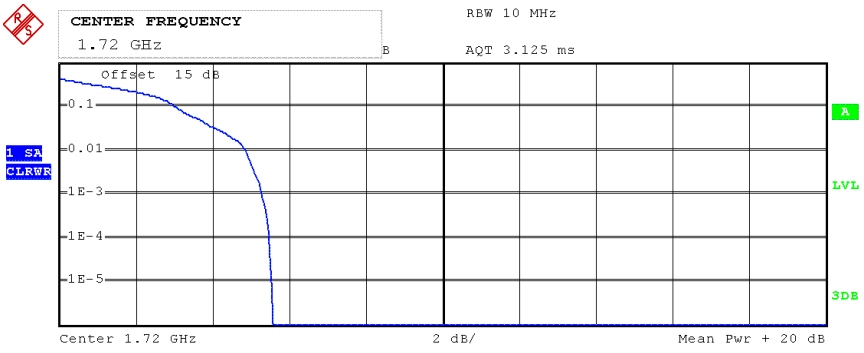



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.97 dBm |
| Peak | 27.32 dBm |
| Crest | 7.35 dB |
| 10% @ | 3.40 dB |
| 1% @ | 5.40 dB |
| .1% @ | 6.40 dB |

Date: 18.JUN.2015 22:41:49

## 16QAM_20MHz_1RB_Low Channel

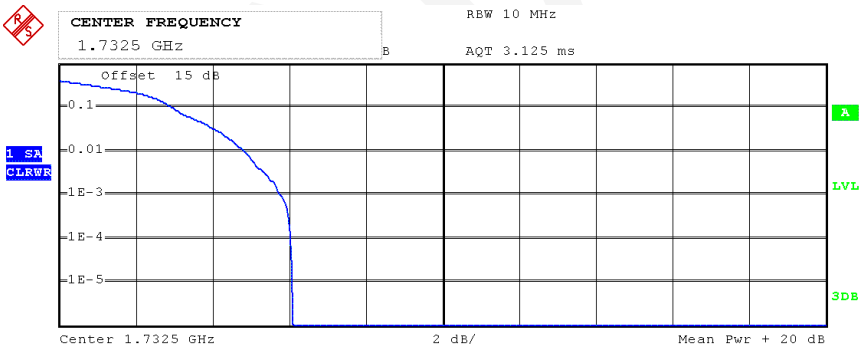



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 21.81 dBm |
| Peak | 27.39 dBm |
| Crest | 5.58 dB |
| 10% @ | 3.08 dB |
| 1% @ | 4.88 dB |
| .1% @ | 5.32 dB |

Date: 18.JUN.2015 22:38:47

## 16QAM 20MHz_1RB Middle Channel

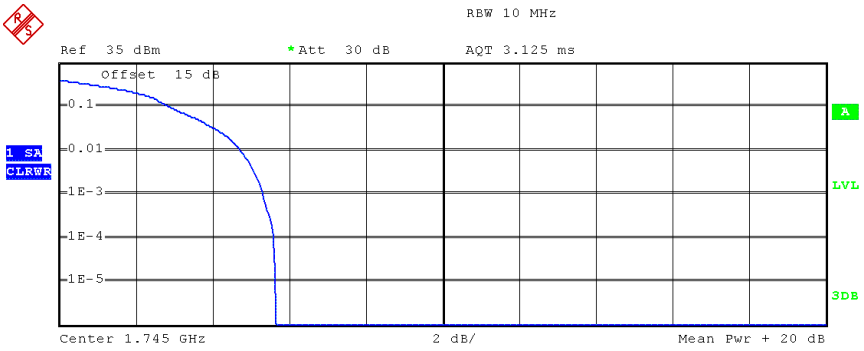



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 21.81 dBm |
| Peak | 27.88 dBm |
| Crest | 6.08 dB |
| 10% @ | 3.00 dB |
| 1% @ | 4.88 dB |
| .1% @ | 5.80 dB |

Date: 18.JUN.2015 22:37:50

## 16QAM 20MHz_1RB High Channel

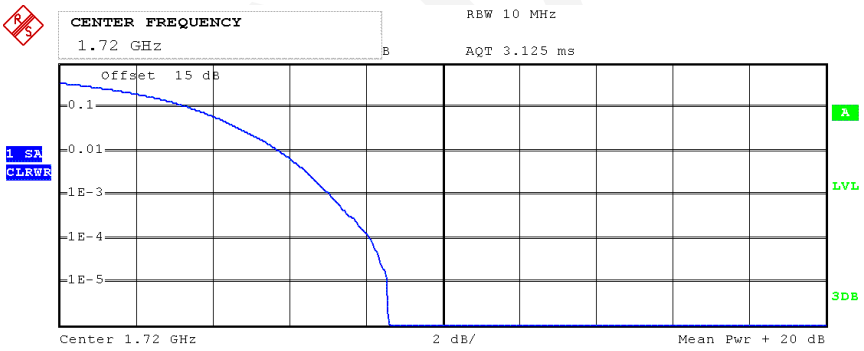



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.54 dBm |
| Peak | 27.18 dBm |
| Crest | 5.64 dB |
| 10% @ | 2.92 dB |
| 1% @ | 4.76 dB |
| .1% @ | 5.32 dB |

Date: 18.JUN.2015 22:37:23

## 16QAM 20MHz_FULL RB Low Channel

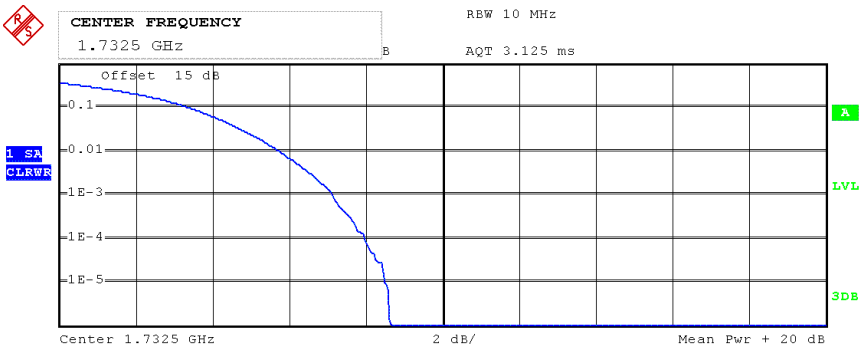



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 19.44 dBm |
| Peak | 28.03 dBm |
| Crest | 8.59 dB |
| 10% @ | 3.48 dB |
| 1% @ | 5.80 dB |
| .1% @ | 7.08 dB |

Date: 18.JUN.2015 22:39:44

## 16QAM 20MHz_FULL RB Middle Channel

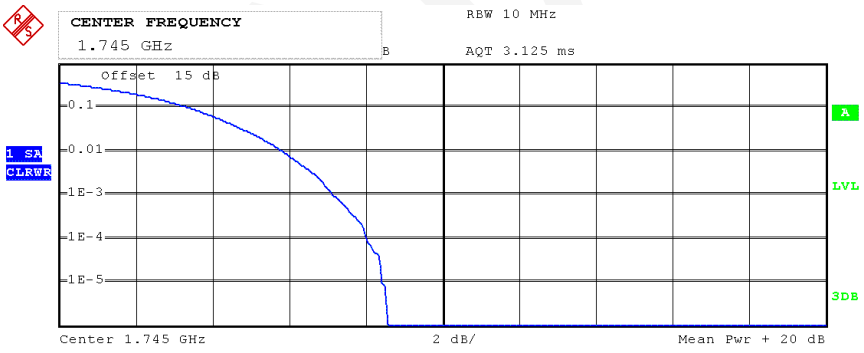



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.46 dBm |
| Peak | 28.10 dBm |
| Crest | 8.63 dB |
| 10% @ | 3.48 dB |
| 1% @ | 5.80 dB |
| .1% @ | 7.16 dB |

Date: 18.JUN.2015 22:40:54

## 16QAM 20MHz_FULL RB High Channel



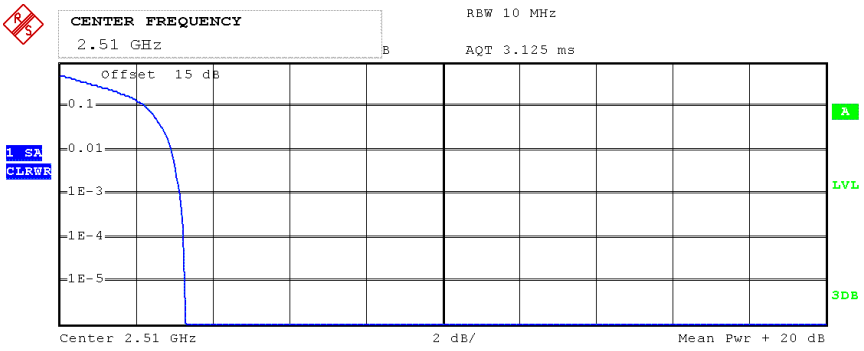

Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.11 dBm |
| Peak | 27.67 dBm |
| Crest | 8.57 dB |
| 10% @ | 3.48 dB |
| 1% @ | 5.88 dB |
| .1% @ | 7.20 dB |

Date: 18.JUN.2015 22:41:34

## LTE Band 7 (PART 27)

### QPSK_20MHz_1RB_Low Channel

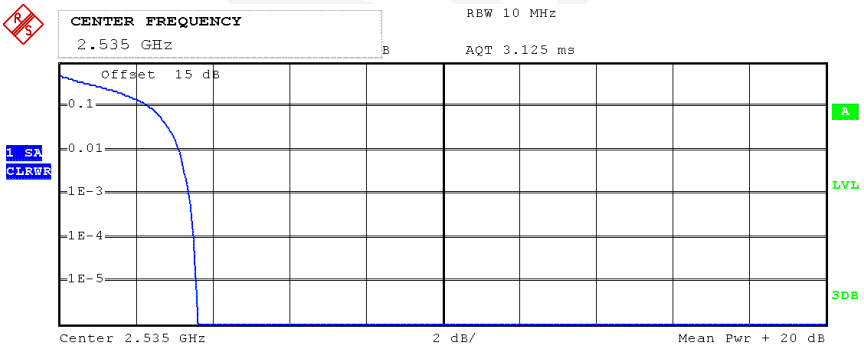



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.27 dBm |
| Peak | 25.54 dBm |
| Crest | 3.28 dB |
| 10% @ | 2.28 dB |
| 1% @ | 2.96 dB |
| .1% @ | 3.16 dB |

Date: 18.JUN.2015 23:17:44

### QPSK_20MHz_1RB Middle Channel

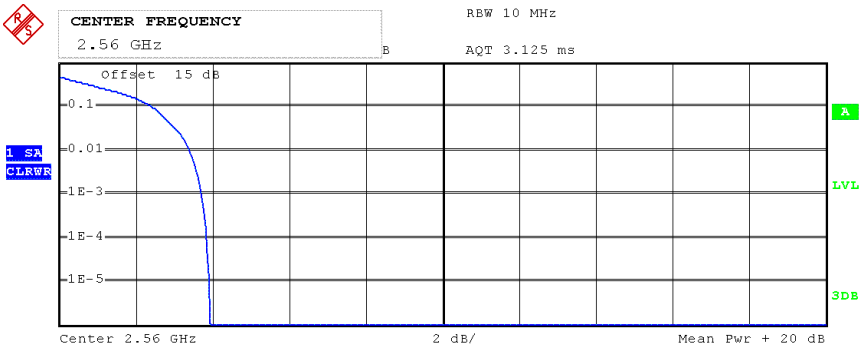



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.29 dBm |
| Peak | 25.90 dBm |
| Crest | 3.61 dB |
| 10% @ | 2.40 dB |
| 1% @ | 3.16 dB |
| .1% @ | 3.40 dB |

Date: 18.JUN.2015 23:16:48

## QPSK_20MHz_1RB High Channel




Complementary Cumulative Distribution Function (100000 samples)

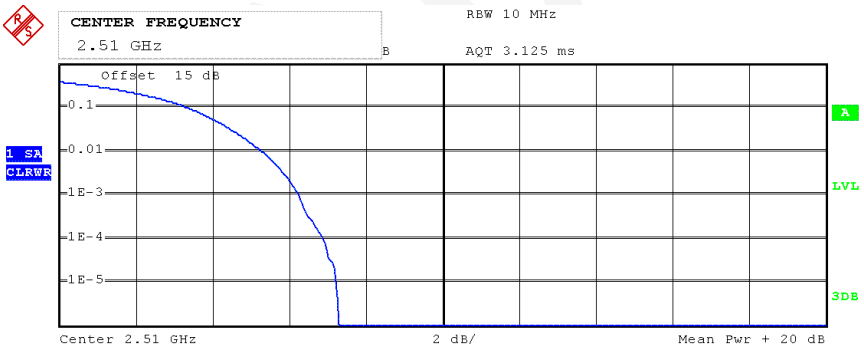
Trace 1

Mean 21.69 dBm
Peak 25.63 dBm
Crest 3.94 dB

10% @ 2.44 dB
1% @ 3.44 dB
.1% @ 3.72 dB

Date: 18.JUN.2015 23:16:16

## QPSK_20MHz_FULL RB Low Channel




Complementary Cumulative Distribution Function (100000 samples)

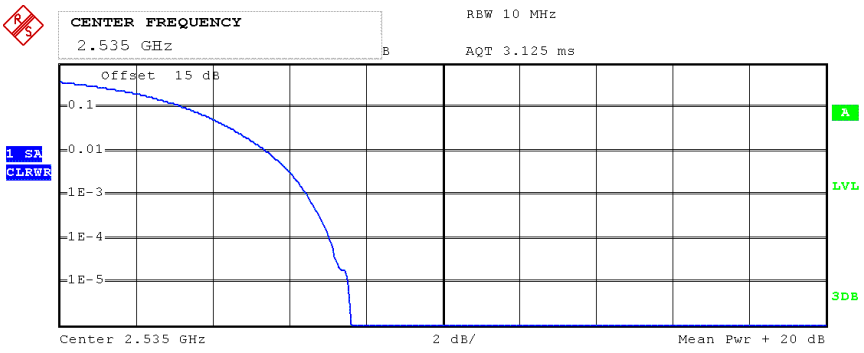
Trace 1

Mean 20.09 dBm
Peak 27.39 dBm
Crest 7.30 dB

10% @ 3.40 dB
1% @ 5.32 dB
.1% @ 6.28 dB

Date: 18.JUN.2015 23:14:11

## QPSK_20MHz_FULL RB Middle Channel

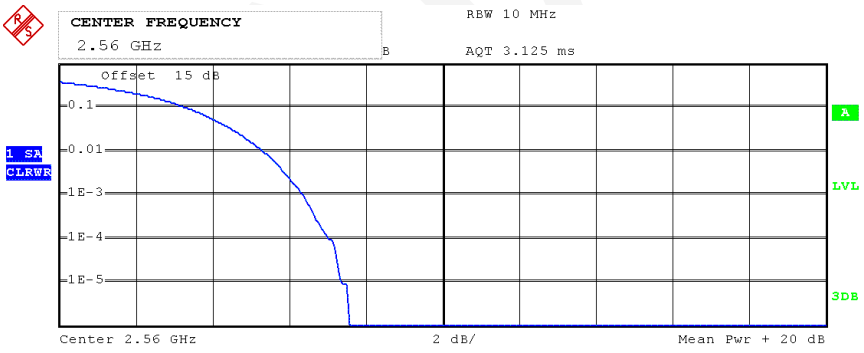



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.57 dBm |
| Peak | 28.18 dBm |
| Crest | 7.61 dB |
| 10% @ | 3.36 dB |
| 1% @ | 5.44 dB |
| .1% @ | 6.48 dB |

Date: 18.JUN.2015 23:13:06

## QPSK 20MHz_FULL RB High Channel

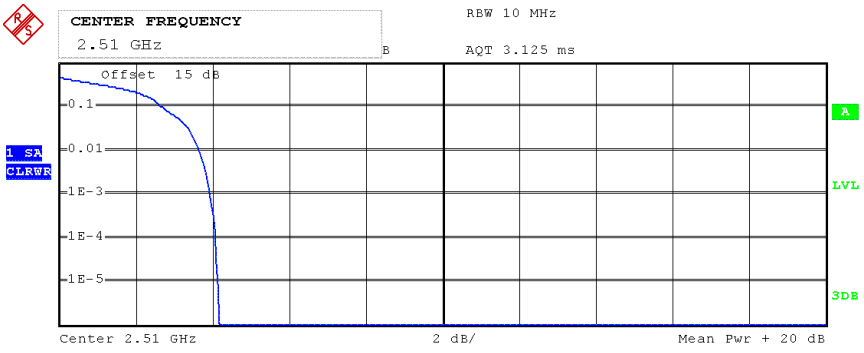



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.85 dBm |
| Peak | 28.42 dBm |
| Crest | 7.57 dB |
| 10% @ | 3.40 dB |
| 1% @ | 5.36 dB |
| .1% @ | 6.40 dB |

Date: 18.JUN.2015 23:15:08

## 16QAM_20MHz_1RB_Low Channel



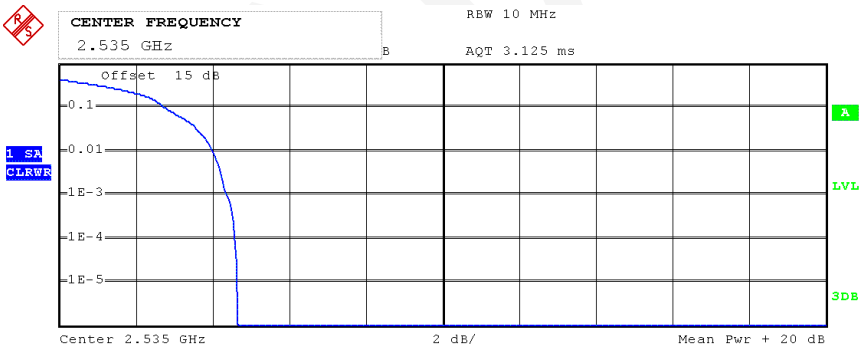

Complementary Cumulative Distribution Function (100000 samples)

Trace 1

| | |
|---|---|
| Mean | 21.51 dBm |
| Peak | 25.69 dBm |
| Crest | 4.17 dB |
| 10% @ | 2.72 dB |
| 1% @ | 3.68 dB |
| .1% @ | 3.96 dB |

Date: 18.JUN.2015 23:17:35

## 16QAM 20MHz_1RB Middle Channel



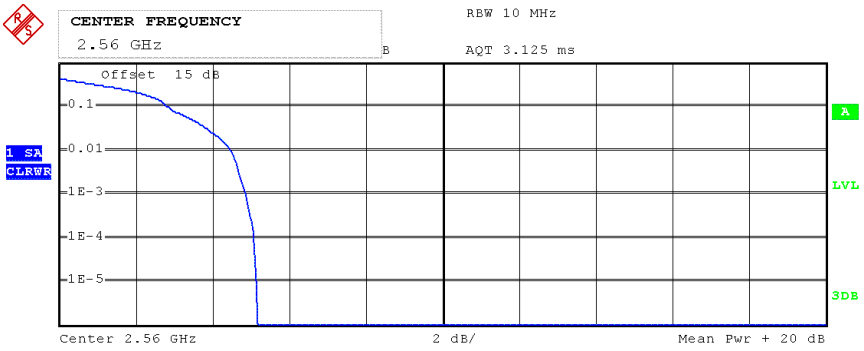

Complementary Cumulative Distribution Function (100000 samples)

Trace 1

| | |
|---|---|
| Mean | 21.44 dBm |
| Peak | 26.11 dBm |
| Crest | 4.67 dB |
| 10% @ | 2.80 dB |
| 1% @ | 4.04 dB |
| .1% @ | 4.40 dB |

Date: 18.JUN.2015 23:17:00

## 16QAM 20MHz_1RB High Channel

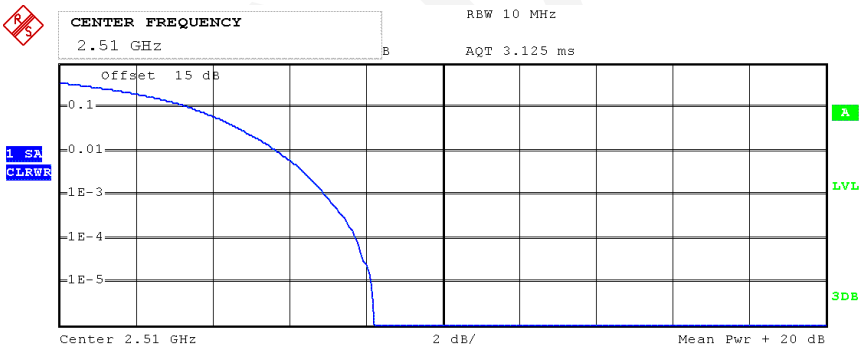



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.79 dBm |
| Peak | 25.98 dBm |
| Crest | 5.19 dB |
| 10% @ | 2.88 dB |
| 1% @ | 4.48 dB |
| .1% @ | 4.88 dB |

Date: 18.JUN.2015 23:16:07

## 16QAM 20MHz_FULL RB Low Channel

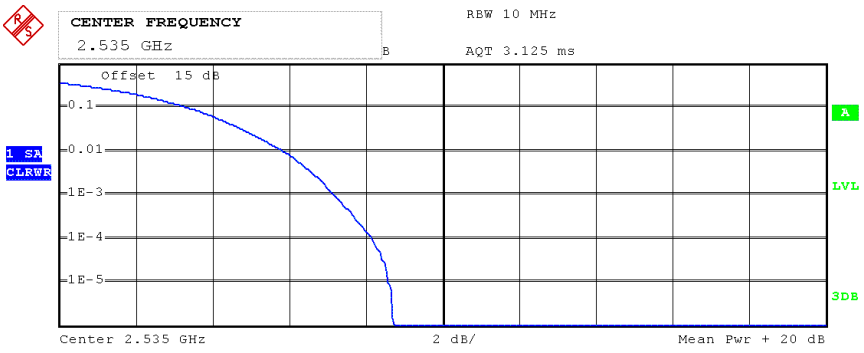



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.25 dBm |
| Peak | 27.46 dBm |
| Crest | 8.22 dB |
| 10% @ | 3.48 dB |
| 1% @ | 5.72 dB |
| .1% @ | 6.96 dB |

Date: 18.JUN.2015 23:13:54

## 16QAM 20MHz_FULL RB Middle Channel

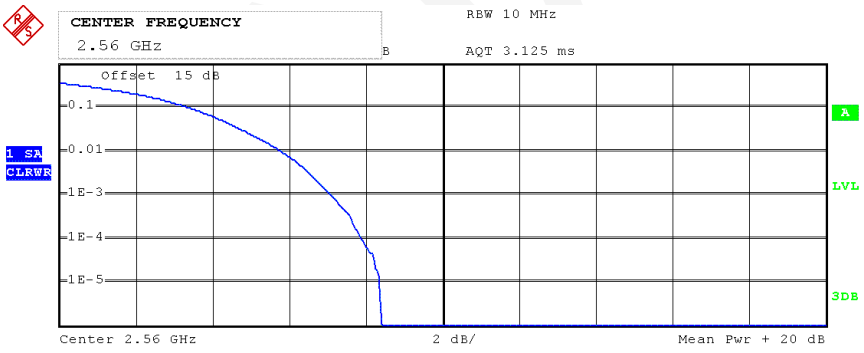



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 19.61 dBm |
| Peak | 28.32 dBm |
| Crest | 8.71 dB |
| 10% @ | 3.44 dB |
| 1% @ | 5.88 dB |
| .1% @ | 7.20 dB |

Date: 18.JUN.2015 23:13:17

## 16QAM 20MHz_FULL RB High Channel



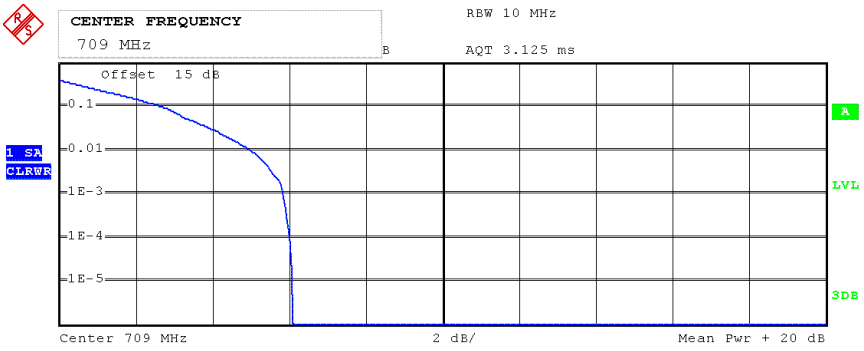

Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.02 dBm |
| Peak | 28.42 dBm |
| Crest | 8.40 dB |
| 10% @ | 3.48 dB |
| 1% @ | 5.84 dB |
| .1% @ | 7.12 dB |

Date: 18.JUN.2015 23:15:19

## LTE Band 17 (PART 27)

### QPSK_10MHz_1RB_Low Channel

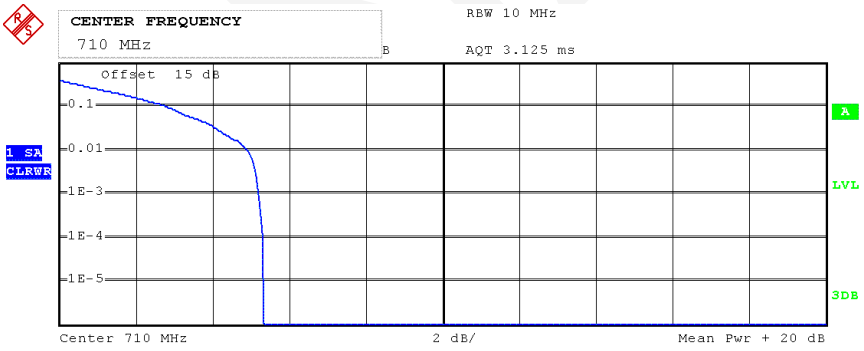



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.91 dBm |
| Peak | 28.99 dBm |
| Crest | 6.08 dB |
| 10% @ | 2.76 dB |
| 1% @ | 5.04 dB |
| .1% @ | 5.88 dB |

Date: 18.JUN.2015 23:38:48

### QPSK_10MHz_1RB Middle Channel

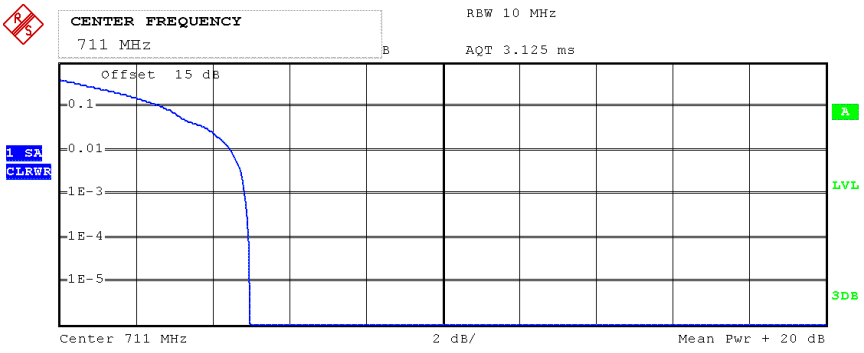



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 23.21 dBm |
| Peak | 28.55 dBm |
| Crest | 5.35 dB |
| 10% @ | 2.88 dB |
| 1% @ | 4.92 dB |
| .1% @ | 5.24 dB |

Date: 18.JUN.2015 23:26:57

## QPSK_10MHz_1RB High Channel



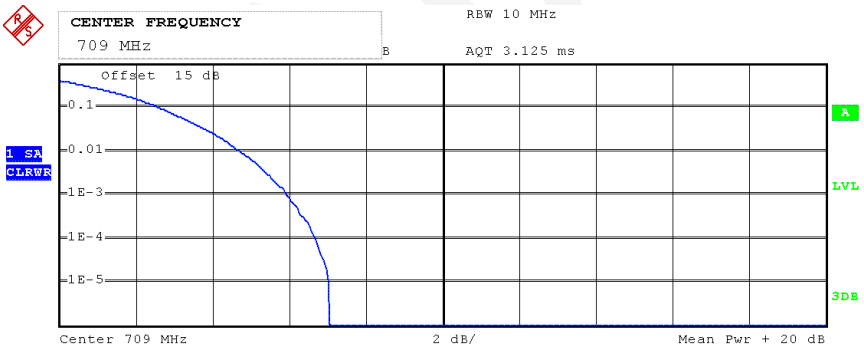

Complementary Cumulative Distribution Function (100000 samples)

Trace 1

| | |
|---|---|
| Mean | 23.24 dBm |
| Peak | 28.20 dBm |
| Crest | 4.96 dB |
| 10% @ | 2.76 dB |
| 1% @ | 4.48 dB |
| .1% @ | 4.88 dB |

Date: 18.JUN.2015 23:31:54

## QPSK_10MHz_FULL RB Low Channel



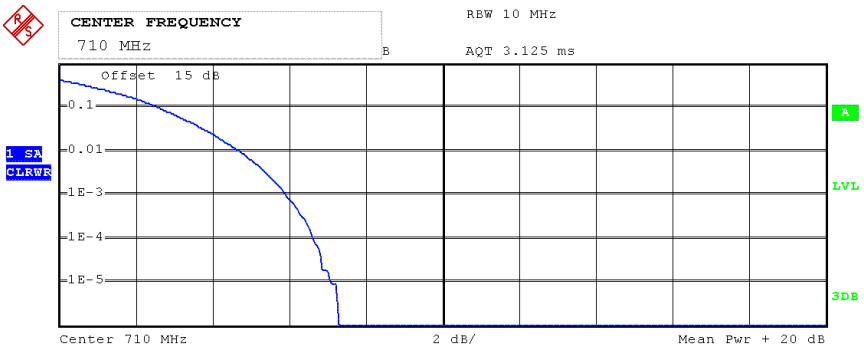

Complementary Cumulative Distribution Function (100000 samples)

Trace 1

| | |
|---|---|
| Mean | 21.27 dBm |
| Peak | 28.34 dBm |
| Crest | 7.07 dB |
| 10% @ | 2.68 dB |
| 1% @ | 4.76 dB |
| .1% @ | 5.96 dB |

Date: 18.JUN.2015 23:30:37

## QPSK_10MHz_FULL RB Middle Channel

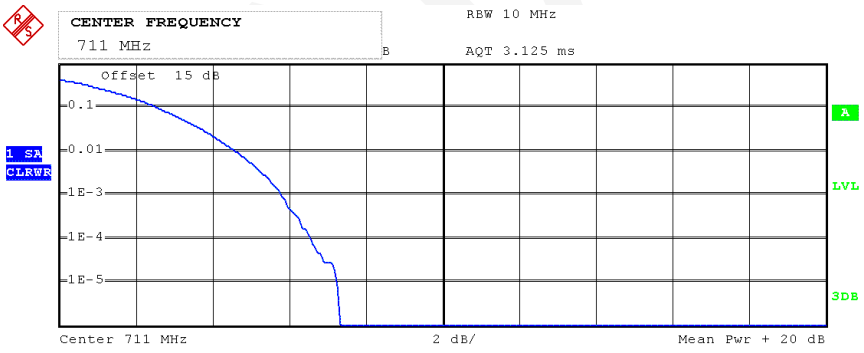



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.61 dBm |
| Peak | 28.91 dBm |
| Crest | 7.29 dB |
| 10% @ | 2.68 dB |
| 1% @ | 4.76 dB |
| .1% @ | 5.92 dB |

Date: 18.JUN.2015 23:30:09

## QPSK 10MHz_FULL RB High Channel

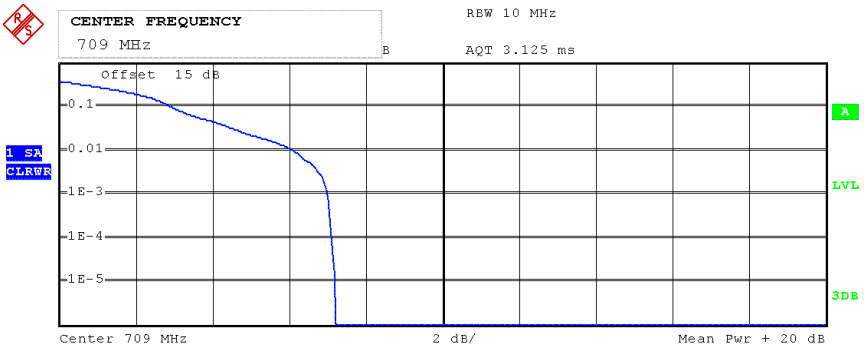



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 21.37 dBm |
| Peak | 28.69 dBm |
| Crest | 7.33 dB |
| 10% @ | 2.64 dB |
| 1% @ | 4.64 dB |
| .1% @ | 5.84 dB |

Date: 18.JUN.2015 23:32:53

## 16QAM_10MHz_1RB_Low Channel

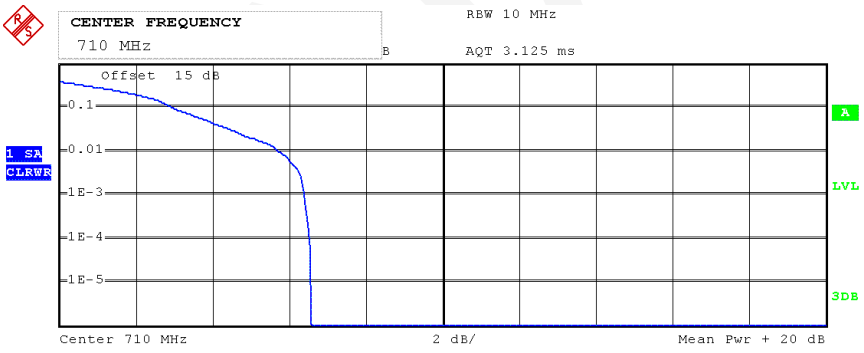



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.12 dBm |
| Peak | 29.34 dBm |
| Crest | 7.22 dB |
| 10% @ | 2.96 dB |
| 1% @ | 6.16 dB |
| .1% @ | 7.04 dB |

Date: 18.JUN.2015 23:38:56

## 16QAM 10MHz_1RB Middle Channel

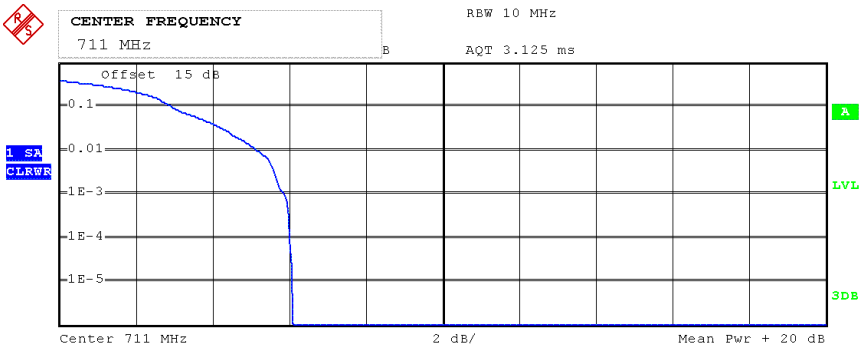



Complementary Cumulative Distribution Function (100000 samples)

| | Trace 1 |
|---|---|
| Mean | 22.33 dBm |
| Peak | 28.91 dBm |
| Crest | 6.57 dB |
| 10% @ | 3.04 dB |
| 1% @ | 5.76 dB |
| .1% @ | 6.40 dB |

Date: 18.JUN.2015 23:27:05

## 16QAM 10MHz_1RB High Channel

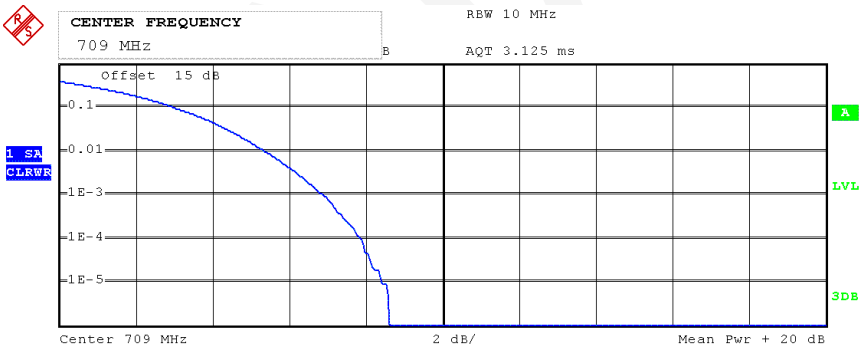



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 22.39 dBm |
| Peak | 28.48 dBm |
| Crest | 6.09 dB |
| 10% @ | 3.00 dB |
| 1% @ | 5.20 dB |
| .1% @ | 5.88 dB |

Date: 18.JUN.2015 23:32:25

## 16QAM 10MHz_FULL RB Low Channel

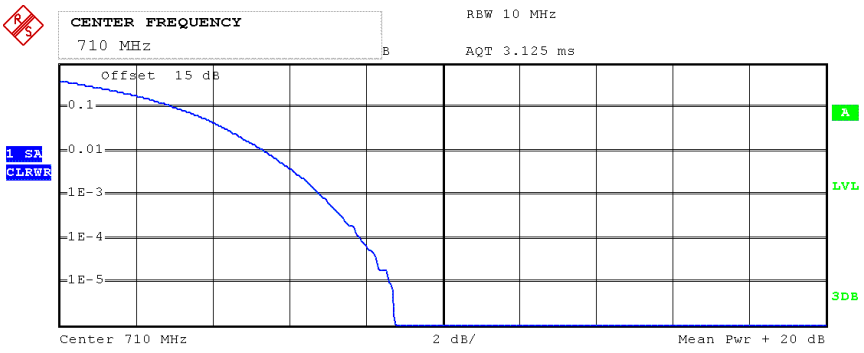



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.35 dBm |
| Peak | 28.98 dBm |
| Crest | 8.62 dB |
| 10% @ | 3.08 dB |
| 1% @ | 5.40 dB |
| .1% @ | 6.96 dB |

Date: 18.JUN.2015 23:30:51

## 16QAM 10MHz_FULL RB Middle Channel

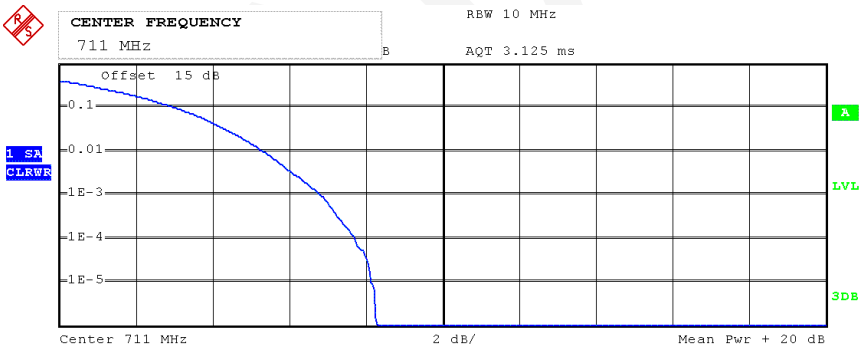



Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.79 dBm |
| Peak | 29.54 dBm |
| Crest | 8.75 dB |
| 10% @ | 3.12 dB |
| 1% @ | 5.40 dB |
| .1% @ | 6.84 dB |

Date: 18.JUN.2015 23:29:55

## 16QAM 10MHz_FULL RB High Channel




Complementary Cumulative Distribution Function (100000 samples)

| Trace 1 | |
|---|---|
| Mean | 20.42 dBm |
| Peak | 28.69 dBm |
| Crest | 8.27 dB |
| 10% @ | 3.12 dB |
| 1% @ | 5.36 dB |
| .1% @ | 6.88 dB |

Date: 18.JUN.2015 23:32:48

ERP & EIRP

**(Part 22H)**

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| | | | S.G. Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | | | |
| **GSM 850 Middle Channel** | | | | | | | | |
| 836.600 | H | 99.12 | 24.2 | 0.0 | 1 | 23.2 | 38.50 | 15.3 |
| 836.600 | V | 103.88 | 32.1 | 0.0 | 1 | 31.1 | 38.50 | 7.4 |
| **EDGE 850_Middle Channel** | | | | | | | | |
| 836.600 | H | 93.05 | 18.1 | 0.0 | 1 | 17.1 | 38.50 | 21.4 |
| 836.600 | V | 97.87 | 26.1 | 0.0 | 1 | 25.1 | 38.50 | 13.4 |
| **WCDMA Band V Middle Channel** | | | | | | | | |
| 836.600 | H | 89.99 | 15.1 | 0.0 | 1 | 14.1 | 38.50 | 24.4 |
| 836.600 | V | 94.17 | 22.4 | 0.0 | 1 | 21.4 | 38.50 | 17.1 |

**(Part 24E)**

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| | | | S.G. Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | | | |
| **PCS 1900 Middle Channel** | | | | | | | | |
| 1880.000 | H | 88.89 | 17.3 | 11.7 | 1.4 | 27.6 | 33.00 | 5.4 |
| 1880.000 | V | 91.04 | 19.6 | 11.7 | 1.4 | 29.9 | 33.00 | 3.1 |
| **EDGE 1900 Middle Channel** | | | | | | | | |
| 1880.000 | H | 83.37 | 11.8 | 11.7 | 1.4 | 22.1 | 33.0 | 10.9 |
| 1880.000 | V | 86.69 | 15.2 | 11.7 | 1.4 | 25.5 | 33.0 | 7.5 |
| **WCDMA Band II Middle Channel** | | | | | | | | |
| 1880.000 | H | 80.78 | 9.2 | 11.7 | 1.4 | 19.5 | 33.0 | 13.5 |
| 1880.000 | V | 83.49 | 12 | 11.7 | 1.4 | 22.3 | 33.0 | 10.7 |

**(Part 27)**

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| | | | S.G. Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | | | |
| **LTE Band 2** | | | | | | | | |
| **QPSK 1.4 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 84.74 | 13.1 | 11.7 | 1.4 | 23.4 | 33.00 | 9.6 |
| 1880.000 | V | 82.93 | 11.5 | 11.7 | 1.4 | 21.8 | 33.00 | 11.2 |
| **QPSK 3 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 84.00 | 12.4 | 11.7 | 1.4 | 22.7 | 33.00 | 10.3 |
| 1880.000 | V | 81.28 | 9.8 | 11.7 | 1.4 | 20.1 | 33.00 | 12.9 |
| **QPSK 5 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 84.74 | 13.1 | 11.7 | 1.4 | 23.4 | 33.00 | 9.6 |
| 1880.000 | V | 82.47 | 11 | 11.7 | 1.4 | 21.3 | 33.00 | 11.7 |
| **QPSK 10 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 83.58 | 12 | 11.7 | 1.4 | 22.3 | 33.00 | 10.7 |
| 1880.000 | V | 81.45 | 10 | 11.7 | 1.4 | 20.3 | 33.00 | 12.7 |
| **QPSK 15 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 82.46 | 10.9 | 11.7 | 1.4 | 21.2 | 33.00 | 11.8 |
| 1880.000 | V | 80.49 | 9 | 11.7 | 1.4 | 19.3 | 33.00 | 13.7 |
| **QPSK 20 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 81.96 | 10.4 | 11.7 | 1.4 | 20.7 | 33.00 | 12.3 |
| 1880.000 | V | 80.22 | 8.8 | 11.7 | 1.4 | 19.1 | 33.00 | 13.9 |
| **16QAM 1.4 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 84.75 | 13.2 | 11.7 | 1.4 | 23.5 | 33.00 | 9.5 |
| 1880.000 | V | 80.03 | 8.6 | 11.7 | 1.4 | 18.9 | 33.00 | 14.1 |
| **16QAM 3 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 84.64 | 13 | 11.7 | 1.4 | 23.3 | 33.00 | 9.7 |
| 1880.000 | V | 80.76 | 9.3 | 11.7 | 1.4 | 19.6 | 33.00 | 13.4 |
| **16QAM 5 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 83.94 | 12.3 | 11.7 | 1.4 | 22.6 | 33.00 | 10.4 |
| 1880.000 | V | 80.38 | 8.9 | 11.7 | 1.4 | 19.2 | 33.00 | 13.8 |
| **16QAM 10 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 83.89 | 12.3 | 11.7 | 1.4 | 22.6 | 33.00 | 10.4 |
| 1880.000 | V | 80.23 | 8.8 | 11.7 | 1.4 | 19.1 | 33.00 | 13.9 |
| **16QAM 15 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 84.06 | 12.5 | 11.7 | 1.4 | 22.8 | 33.00 | 10.2 |
| 1880.000 | V | 79.79 | 8.3 | 11.7 | 1.4 | 18.6 | 33.00 | 14.4 |
| **16QAM 20 MHz Middle Channel** | | | | | | | | |
| 1880.000 | H | 81.29 | 9.7 | 11.7 | 1.4 | 20.0 | 33.00 | 13.0 |
| 1880.000 | V | 77.08 | 5.6 | 11.7 | 1.4 | 15.9 | 33.00 | 17.1 |

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| | | | S.G. Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | | | |
| **LTE Band 4** | | | | | | | | |
| **QPSK 1.4 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 86.68 | 13.7 | 10.9 | 1.4 | 23.2 | 30.00 | 6.8 |
| 1732.500 | V | 85.58 | 12.3 | 10.9 | 1.4 | 21.8 | 30.00 | 8.2 |
| **QPSK 3 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 85.74 | 12.7 | 10.9 | 1.4 | 22.2 | 30.00 | 7.8 |
| 1732.500 | V | 84.40 | 11.1 | 10.9 | 1.4 | 20.6 | 30.00 | 9.4 |
| **QPSK 5 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 85.85 | 12.8 | 10.9 | 1.4 | 22.3 | 30.00 | 7.7 |
| 1732.500 | V | 84.43 | 11.1 | 10.9 | 1.4 | 20.6 | 30.00 | 9.4 |
| **QPSK 10 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 85.54 | 12.5 | 10.9 | 1.4 | 22.0 | 30.00 | 8.0 |
| 1732.500 | V | 84.52 | 11.2 | 10.9 | 1.4 | 20.7 | 30.00 | 9.3 |
| **QPSK 15 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 84.37 | 11.4 | 10.9 | 1.4 | 20.9 | 30.00 | 9.1 |
| 1732.500 | V | 82.91 | 9.6 | 10.9 | 1.4 | 19.1 | 30.00 | 10.9 |
| **QPSK 20 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 82.65 | 9.6 | 10.9 | 1.4 | 19.1 | 30.00 | 10.9 |
| 1732.500 | V | 80.56 | 7.2 | 10.9 | 1.4 | 16.7 | 30.00 | 13.3 |
| **16QAM 1.4 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 85.95 | 12.9 | 10.9 | 1.4 | 22.4 | 30.00 | 7.6 |
| 1732.500 | V | 84.64 | 11.3 | 10.9 | 1.4 | 20.8 | 30.00 | 9.2 |
| **16QAM 3 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 84.15 | 11.1 | 10.9 | 1.4 | 20.6 | 30.00 | 9.4 |
| 1732.500 | V | 83.45 | 10.1 | 10.9 | 1.4 | 19.6 | 30.00 | 10.4 |
| **16QAM 5 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 83.66 | 10.7 | 10.9 | 1.4 | 20.2 | 30.00 | 9.8 |
| 1732.500 | V | 81.57 | 8.2 | 10.9 | 1.4 | 17.7 | 30.00 | 12.3 |
| **16QAM 10 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 83.54 | 10.5 | 10.9 | 1.4 | 20.0 | 30.00 | 10.0 |
| 1732.500 | V | 81.72 | 8.4 | 10.9 | 1.4 | 17.9 | 30.00 | 12.1 |
| **16QAM 15 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 82.46 | 9.5 | 10.9 | 1.4 | 19.0 | 30.00 | 11.0 |
| 1732.500 | V | 80.25 | 6.9 | 10.9 | 1.4 | 16.4 | 30.00 | 13.6 |
| **16QAM 20 MHz Middle Channel** | | | | | | | | |
| 1732.500 | H | 81.82 | 8.8 | 10.9 | 1.4 | 18.3 | 30.00 | 11.7 |
| 1732.500 | V | 79.43 | 6.1 | 10.9 | 1.4 | 15.6 | 30.00 | 14.4 |

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| | | | S.G. Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | | | |
| **LTE Band 7** | | | | | | | | |
| **QPSK 5 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 81.92 | 10.7 | 13.1 | 2.5 | 21.3 | 33.00 | 11.7 |
| 2535.000 | V | 79.07 | 9.3 | 13.1 | 2.5 | 19.9 | 33.00 | 13.1 |
| **QPSK 10 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 81.89 | 10.7 | 13.1 | 2.5 | 21.3 | 33.00 | 11.7 |
| 2535.000 | V | 79.27 | 9.5 | 13.1 | 2.5 | 20.1 | 33.00 | 12.9 |
| **QPSK 15 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 80.96 | 9.8 | 13.1 | 2.5 | 20.4 | 33.00 | 12.6 |
| 2535.000 | V | 78.69 | 8.9 | 13.1 | 2.5 | 19.5 | 33.00 | 13.5 |
| **QPSK 20 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 79.36 | 8.2 | 13.1 | 2.5 | 18.8 | 33.00 | 14.2 |
| 2535.000 | V | 77.79 | 8 | 13.1 | 2.5 | 18.6 | 33.00 | 14.4 |
| **16QAM 5 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 81.78 | 10.6 | 13.1 | 2.5 | 21.2 | 33.00 | 11.8 |
| 2535.000 | V | 79.96 | 10.2 | 13.1 | 2.5 | 20.8 | 33.00 | 12.2 |
| **16QAM 10 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 81.69 | 10.5 | 13.1 | 2.5 | 21.1 | 33.00 | 11.9 |
| 2535.000 | V | 79.03 | 9.3 | 13.1 | 2.5 | 19.9 | 33.00 | 13.1 |
| **16QAM 15 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 80.83 | 9.6 | 13.1 | 2.5 | 20.2 | 33.00 | 12.8 |
| 2535.000 | V | 78.28 | 8.5 | 13.1 | 2.5 | 19.1 | 33.00 | 13.9 |
| **16QAM 20 MHz Middle Channel** | | | | | | | | |
| 2535.000 | H | 80.08 | 8.9 | 13.1 | 2.5 | 19.5 | 33.00 | 13.5 |
| 2535.000 | V | 78.58 | 8.8 | 13.1 | 2.5 | 19.4 | 33.00 | 13.6 |

| Frequency (MHz) | Polar (H/V) | Receiver Reading (dBμV) | Substituted Method | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| | | | S.G. Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | | | |
| **LTE Band 17** | | | | | | | | |
| **QPSK 5 MHz Middle Channel** | | | | | | | | |
| 710.000 | H | 99.79 | 23 | 0.0 | 0.9 | 22.1 | 34.80 | 12.7 |
| 710.000 | V | 95.63 | 21.3 | 0.0 | 0.9 | 20.4 | 34.80 | 14.4 |
| **QPSK 10 MHz Middle Channel** | | | | | | | | |
| 710.000 | H | 98.34 | 21.5 | 0.0 | 0.9 | 20.6 | 34.80 | 14.2 |
| 710.000 | V | 93.11 | 18.8 | 0.0 | 0.9 | 17.9 | 34.80 | 16.9 |
| **16QAM 5 MHz Middle Channel** | | | | | | | | |
| 710.000 | H | 99.16 | 22.3 | 0.0 | 0.9 | 21.4 | 34.80 | 13.4 |
| 710.000 | V | 95.34 | 21 | 0.0 | 0.9 | 20.1 | 34.80 | 14.7 |
| **16QAM 10 MHz Middle Channel** | | | | | | | | |
| 710.000 | H | 98.01 | 21.2 | 0.0 | 0.9 | 20.3 | 34.80 | 14.5 |
| 710.000 | V | 93.15 | 18.8 | 0.0 | 0.9 | 17.9 | 34.80 | 16.9 |

FINAL

# FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH

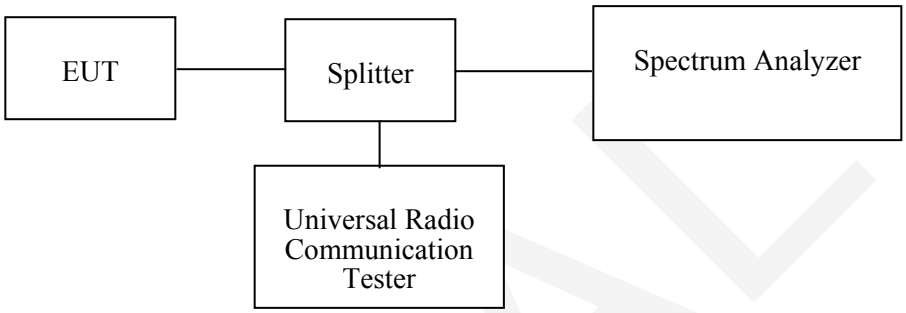
## Applicable Standard

FCC §2.1049, §22.917, §22.905, §24.238 and §2 7.53.

## Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The 26 dB & 99% bandwidth was recorded.




## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | Spectrum Analyzer | FSP 38 | 100478 | 2015-05-09 | 2016-05-09 |

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25.4-25.7 °C |
| **Relative Humidity:** | 53-57% |
| **ATM Pressure:** | 100kPa |

*The testing was performed by Lion Xiao on 2015-06-12 and 2015-06-19*

*Test Mode: Transmitting*

*Test Result: Compliant. Please refer to the following table and plots.*

GSM/EDGE/WCDMA

| Band | Channel No. | Mode | 99% Occupied Bandwidth (kHz) | 26 dB Occupied Bandwidth (kHz) |
|---|---|---|---|---|
| Cellular | 190 | GSM | 242 | 316 |
| | | EDGE | 250 | 322 |
| PCS | 661 | PCS | 244 | 316 |
| | | EDGE | 250 | 314 |
| WCDMA Band Ⅱ | 9400 | Rel 99 | 4220 | 4920 |
| | 9400 | HSDPA | 4220 | 4920 |
| | 9400 | HSUPA | 4220 | 4900 |
| WCDMA Band V | 4183 | Rel 99 | 4180 | 4700 |
| | 4183 | HSDPA | 4180 | 4720 |
| | 4183 | HSUPA | 4200 | 4740 |

LTE

| Band | Test Modulation | Test Bandwidth (MHz) | Test Channel | 99% Occupied Bandwidth (MHz) | 26 dB Occupied Bandwidth (MHz) |
|---|---|---|---|---|---|
| LTE Band 2 | QPSK | 1.4 | M | 1.112 | 1.287 |
| | | 3 | | 2.754 | 3.126 |
| | | 5 | | 4.569 | 5.150 |
| | | 10 | | 9.138 | 10.421 |
| | | 15 | | 13.587 | 15.090 |
| | | 20 | | 18.196 | 20.040 |
| | 16QAM | 1.4 | M | 1.106 | 1.293 |
| | | 3 | | 2.754 | 3.102 |
| | | 5 | | 4.549 | 5.130 |
| | | 10 | | 9.138 | 10.421 |
| | | 15 | | 13.587 | 15.150 |
| | | 20 | | 18.277 | 20.281 |

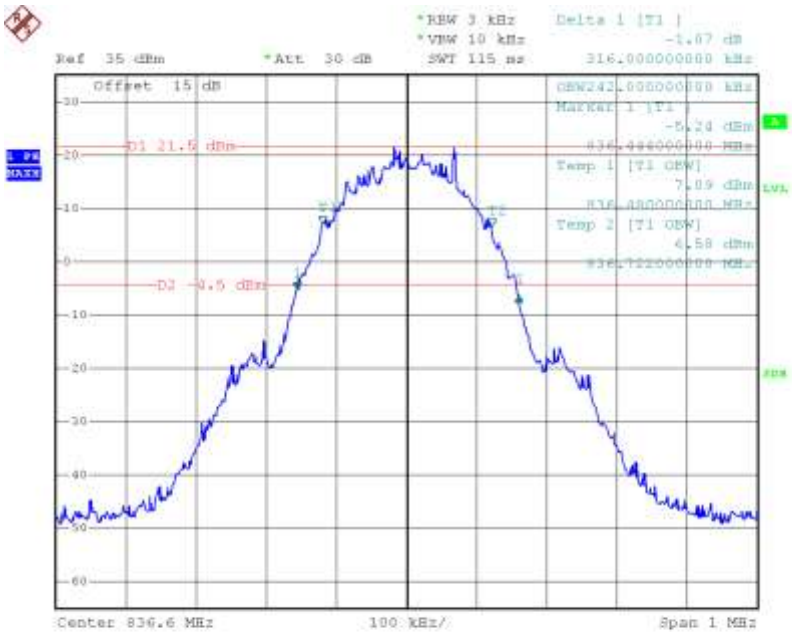
| Band | Test Modulation | Test Bandwidth (MHz) | Test Channel | 99% Occupied Bandwidth (MHz) | 26 dB Occupied Bandwidth (MHz) |
|---|---|---|---|---|---|
| LTE Band 4 | QPSK | 1.4 | M | 1.100 | 1.287 |
| | | 3 | | 2.754 | 3.126 |
| | | 5 | | 4.549 | 5.110 |
| | | 10 | | 9.098 | 10.341 |
| | | 15 | | 13.647 | 15.210 |
| | | 20 | | 18.196 | 20.040 |
| | 16QAM | 1.4 | M | 1.106 | 1.287 |
| | | 3 | | 2.754 | 3.114 |
| | | 5 | | 4.549 | 5.090 |
| | | 10 | | 9.098 | 10.421 |
| | | 15 | | 13.527 | 14.970 |
| | | 20 | | 18.116 | 20.281 |

| Band | Test Modulation | Test Bandwidth (MHz) | Test Channel | 99% Occupied Bandwidth (MHz) | 26 dB Occupied Bandwidth (MHz) |
|---|---|---|---|---|---|
| LTE Band 7 | QPSK | 5 | M | 4.549 | 5.110 |
| | | 10 | | 9.098 | 10.381 |
| | | 15 | | 13.587 | 15.150 |
| | | 20 | | 18.196 | 20.040 |
| | 16QAM | 5 | M | 4.549 | 5.150 |
| | | 10 | | 9.098 | 10.301 |
| | | 15 | | 13.587 | 15.090 |
| | | 20 | | 18.116 | 20.040 |

| Band | Test Modulation | Test Bandwidth (MHz) | Test Channel | 99% Occupied Bandwidth (MHz) | 26 dB Occupied Bandwidth (MHz) |
|---|---|---|---|---|---|
| LTE Band 17 | QPSK | 5 | M | 4.569 | 5.130 |
| | | 10 | | 9.138 | 10.381 |
| | 16QAM | 5 | M | 4.529 | 5.110 |
| | | 10 | | 9.138 | 10.461 |

PART 22H

**GMSK 850 Cellular Band**

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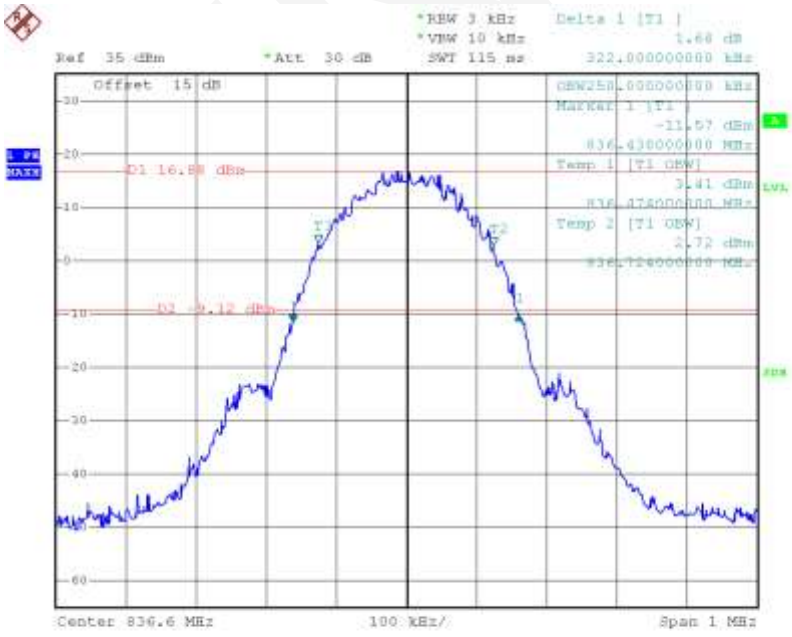
**EDGE 850 Cellular Band**

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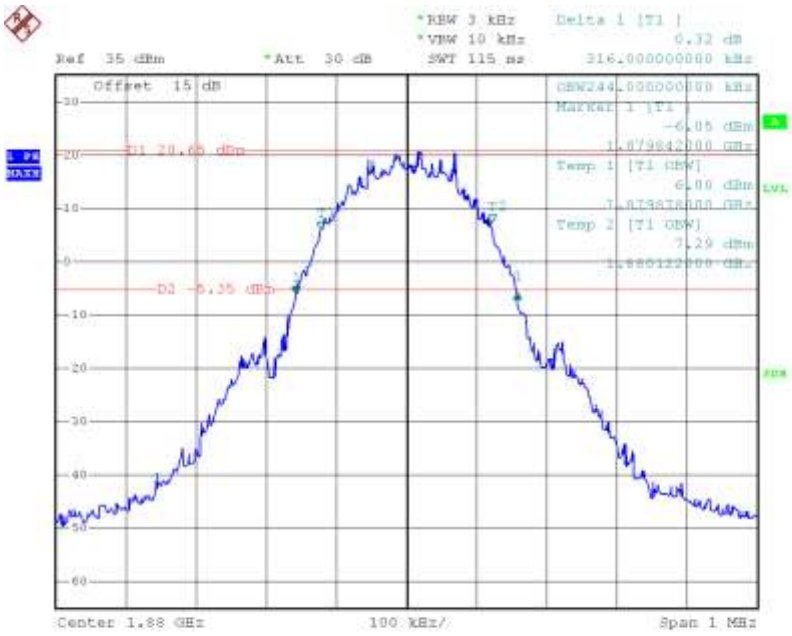
PART 24E

**GMSK PCS Band**

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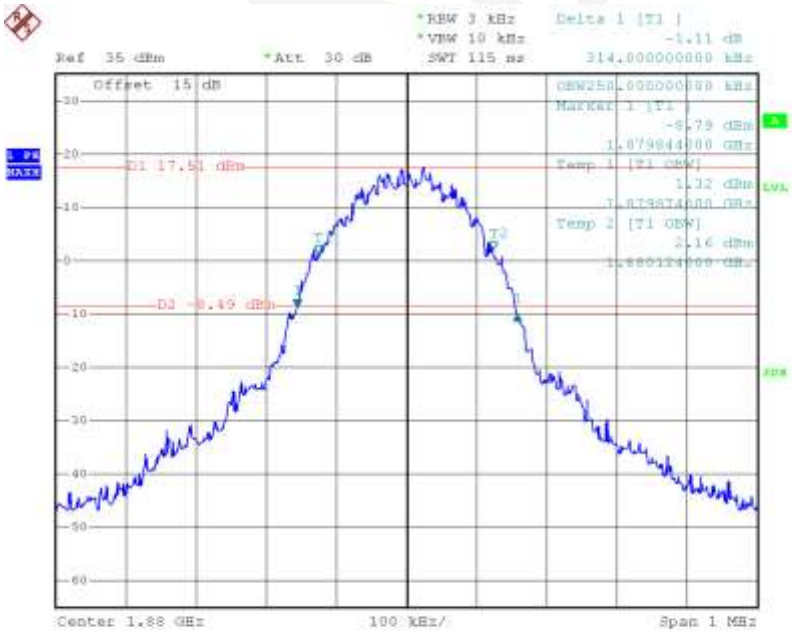
**EDGE PCS Band**

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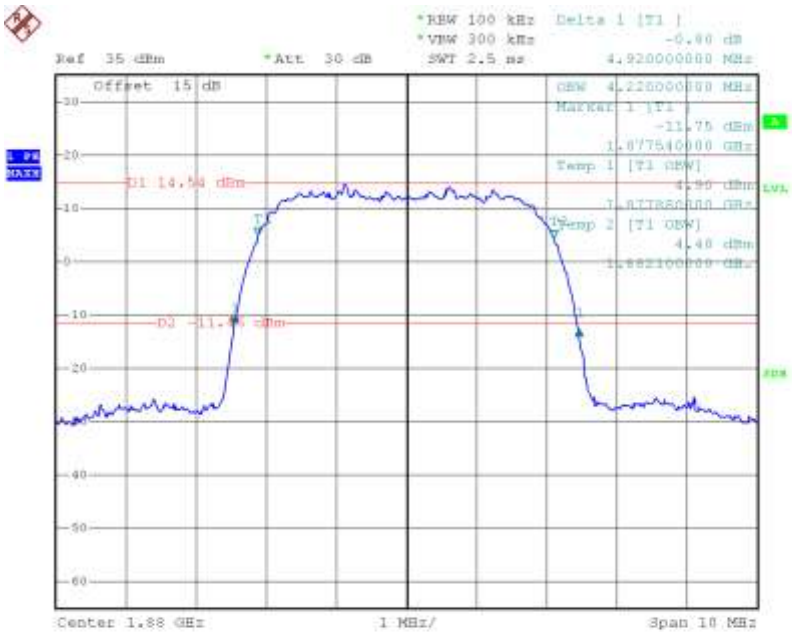
**REL99 Band II**

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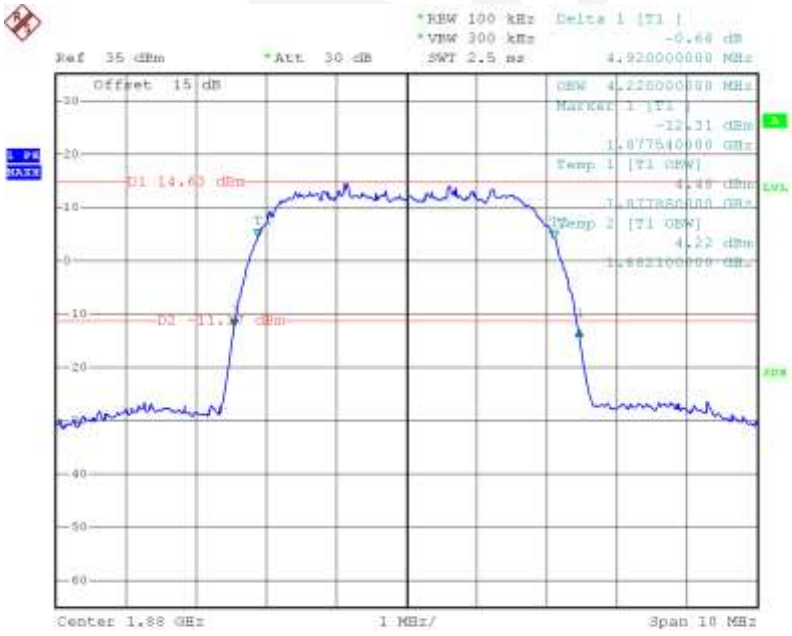
**HSDPA Band II**

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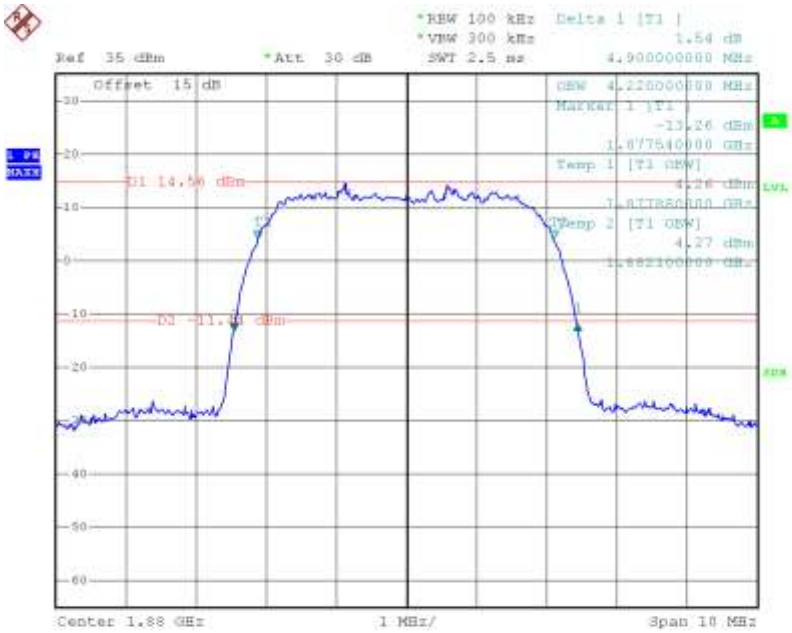
**HSUPA Band II**

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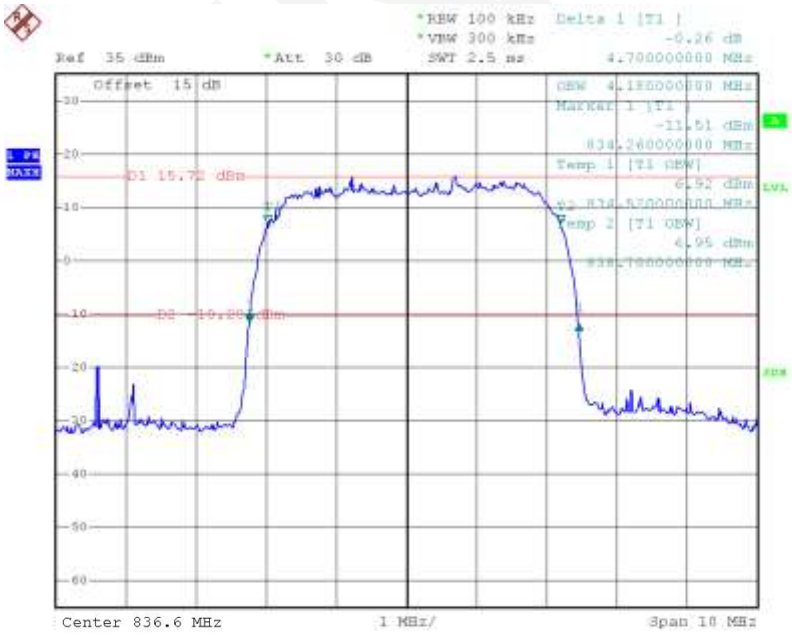
PART 22H

**REL99 Band V**

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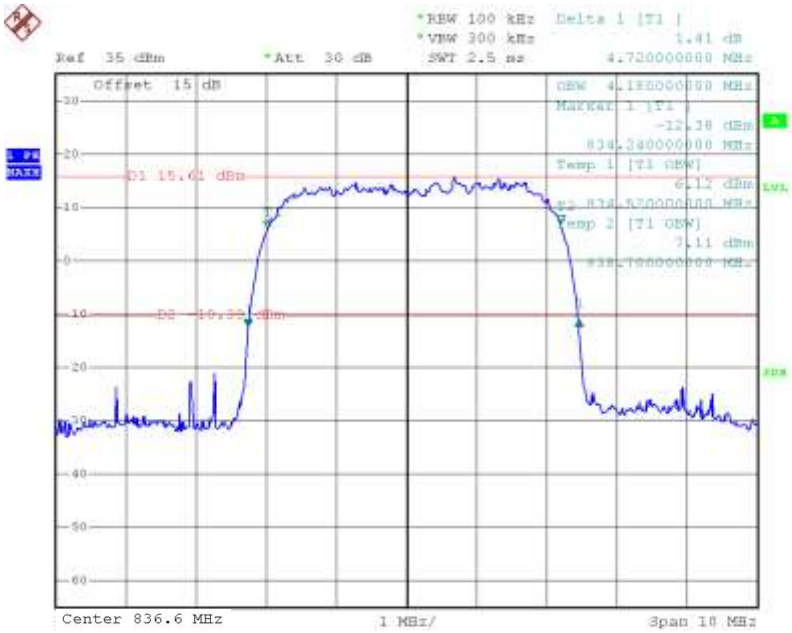
**HSDPA Band V**

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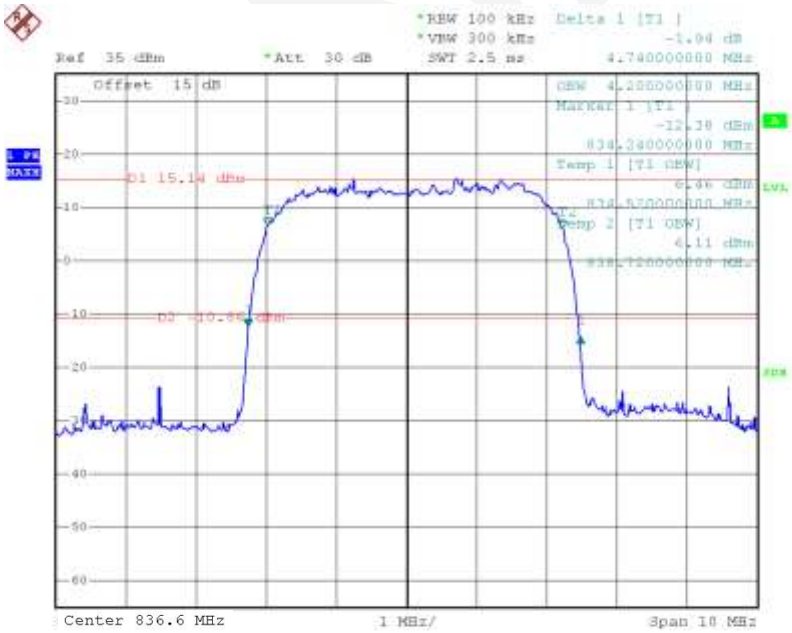
**HSUPA Band V**

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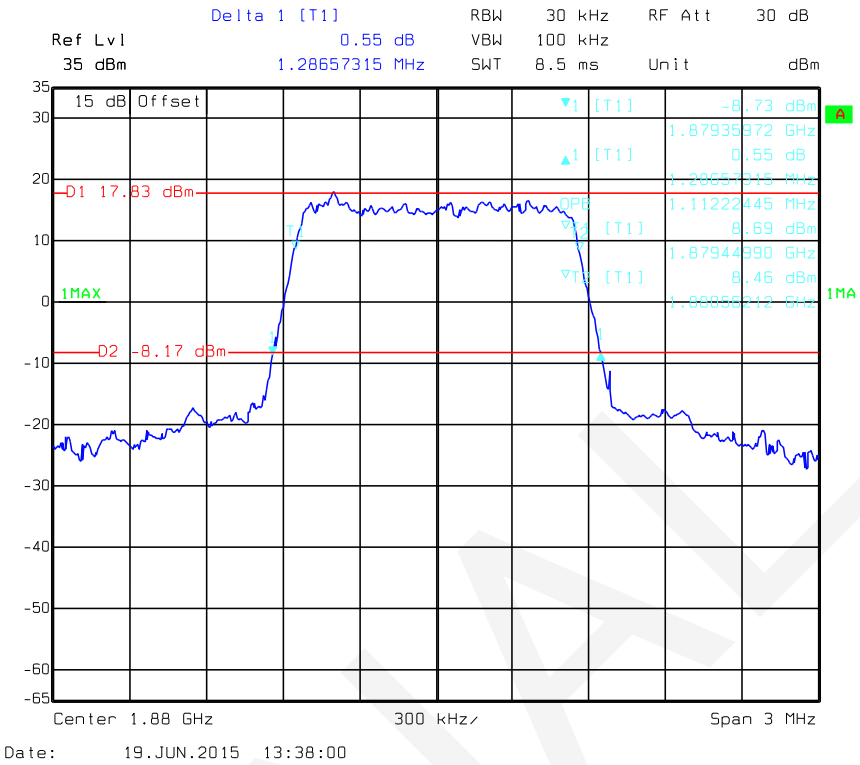
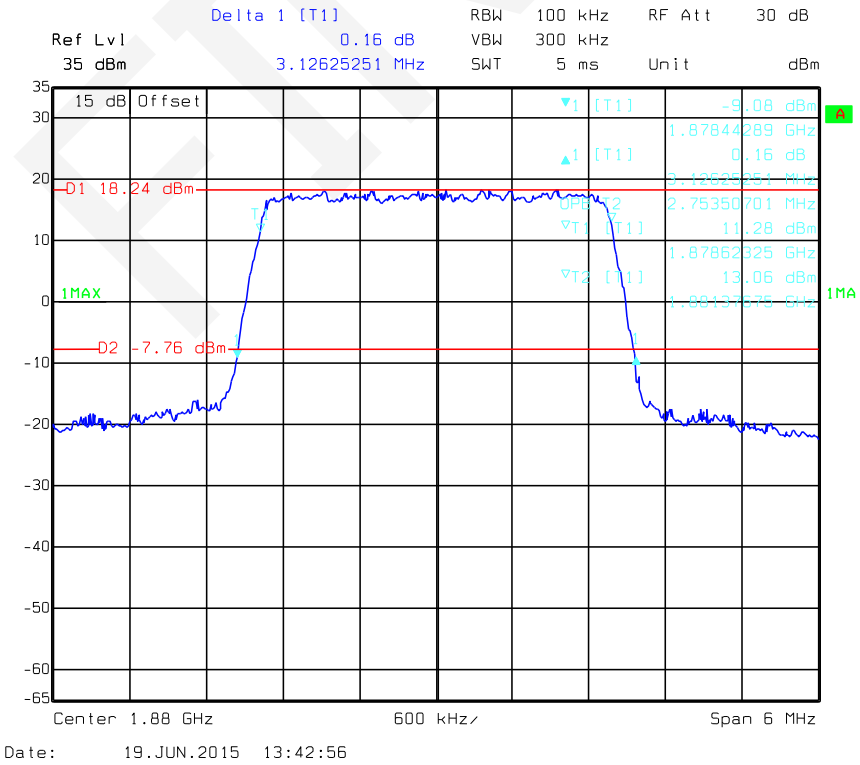
PART 27

LTE Band 2

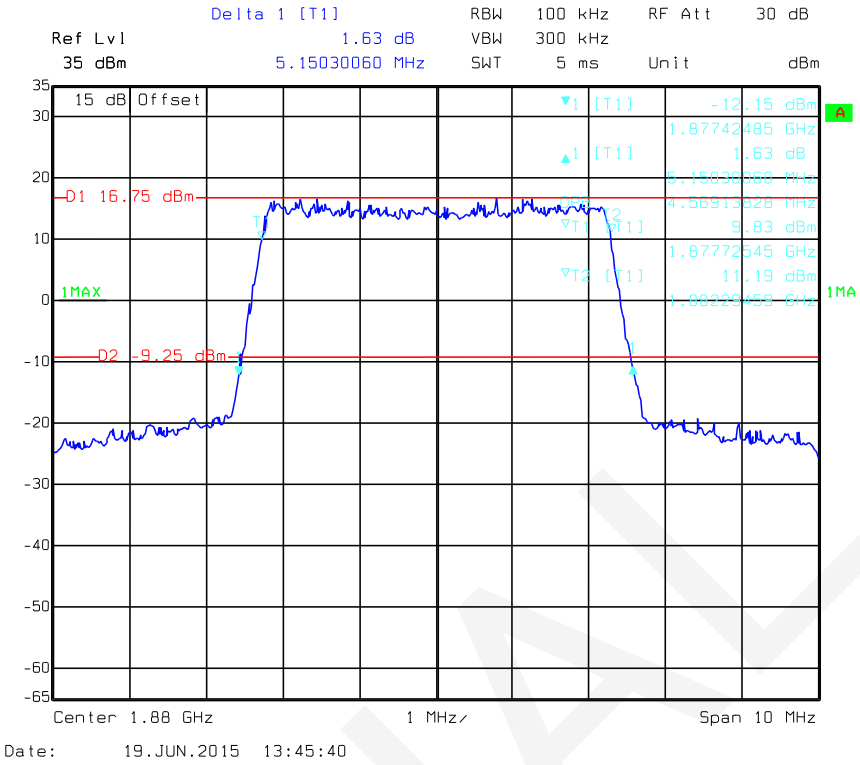
**QPSK_1.4 MHz**




**QPSK_3 MHz**



## QPSK_5 MHz

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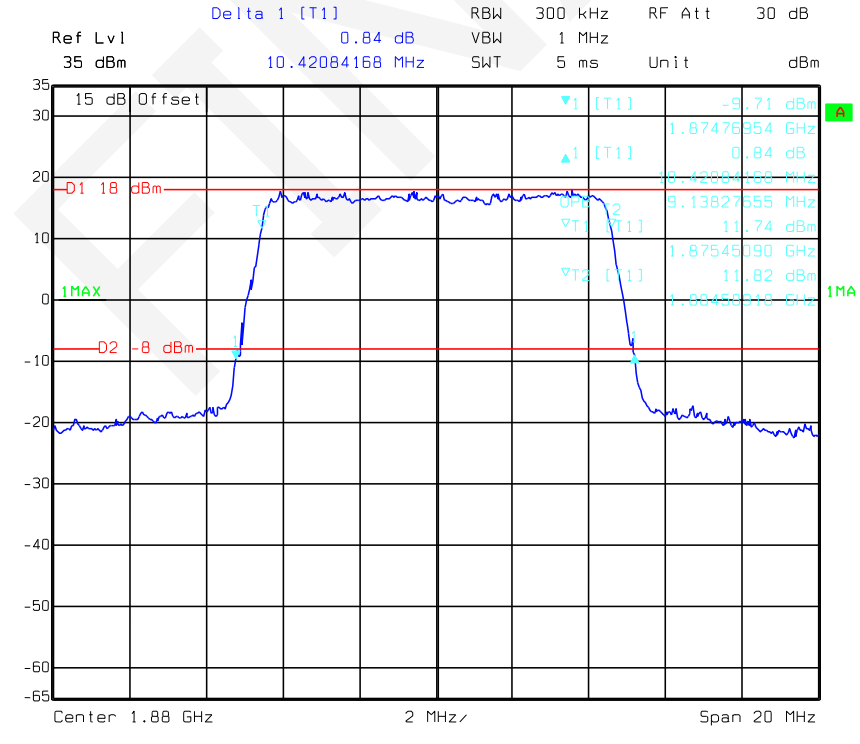
## QPSK_10 MHz

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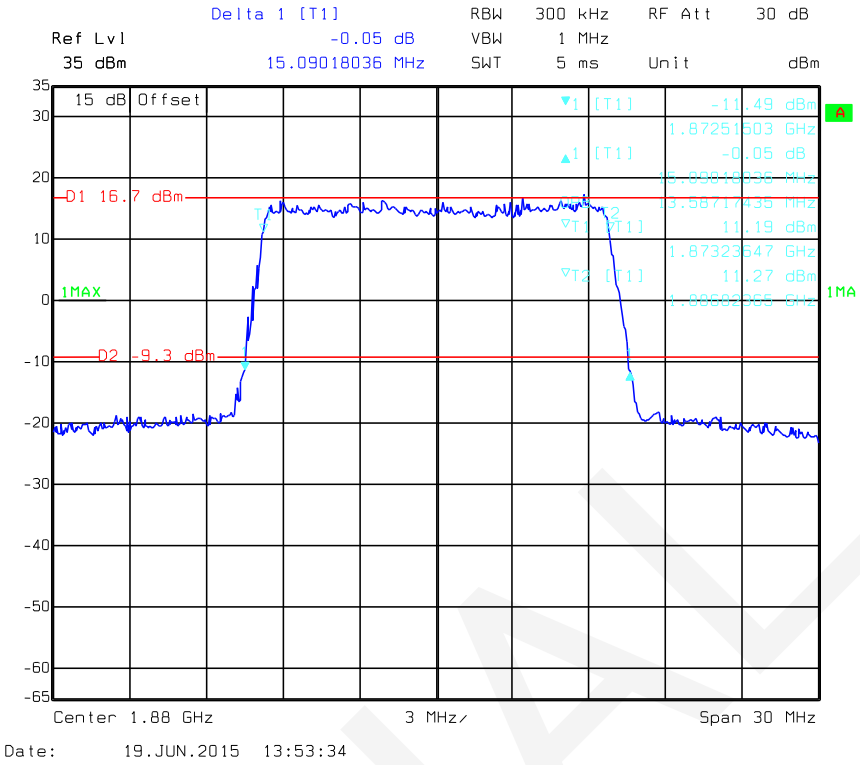
## QPSK_15 MHz

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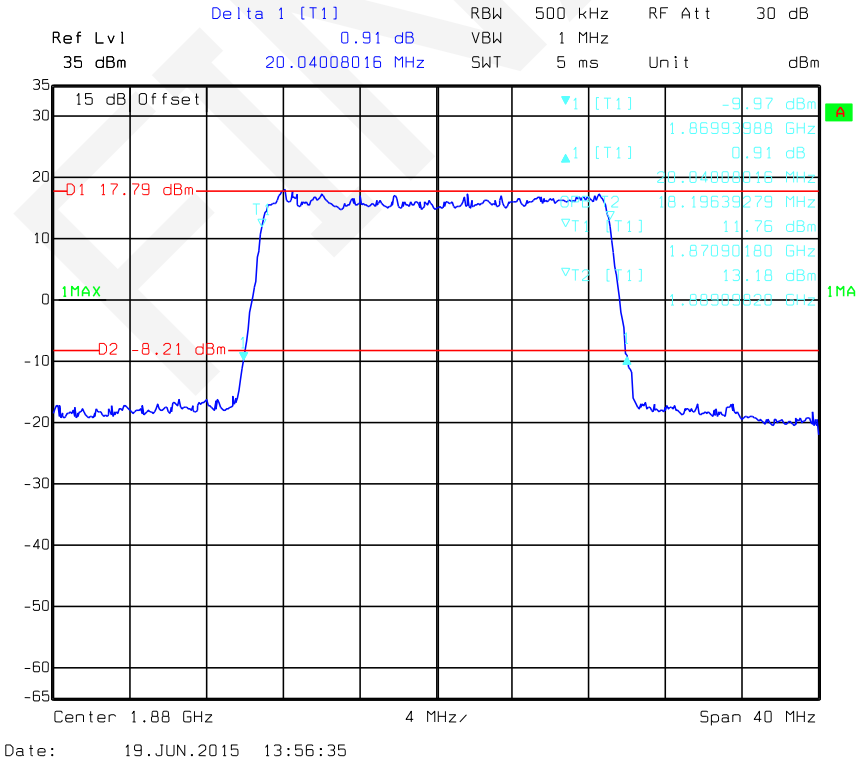
## QPSK_20 MHz

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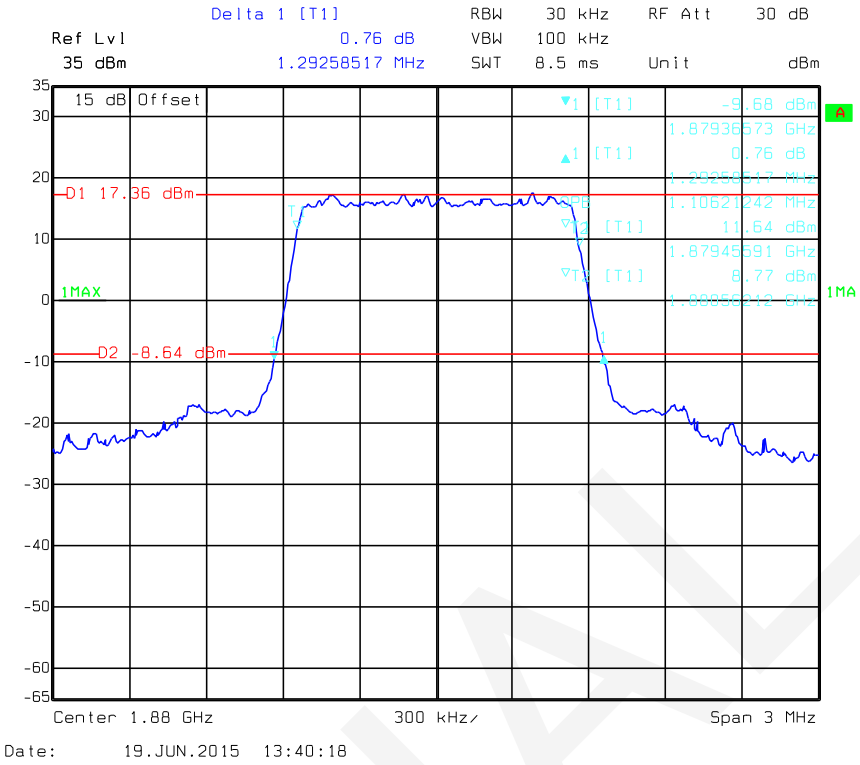
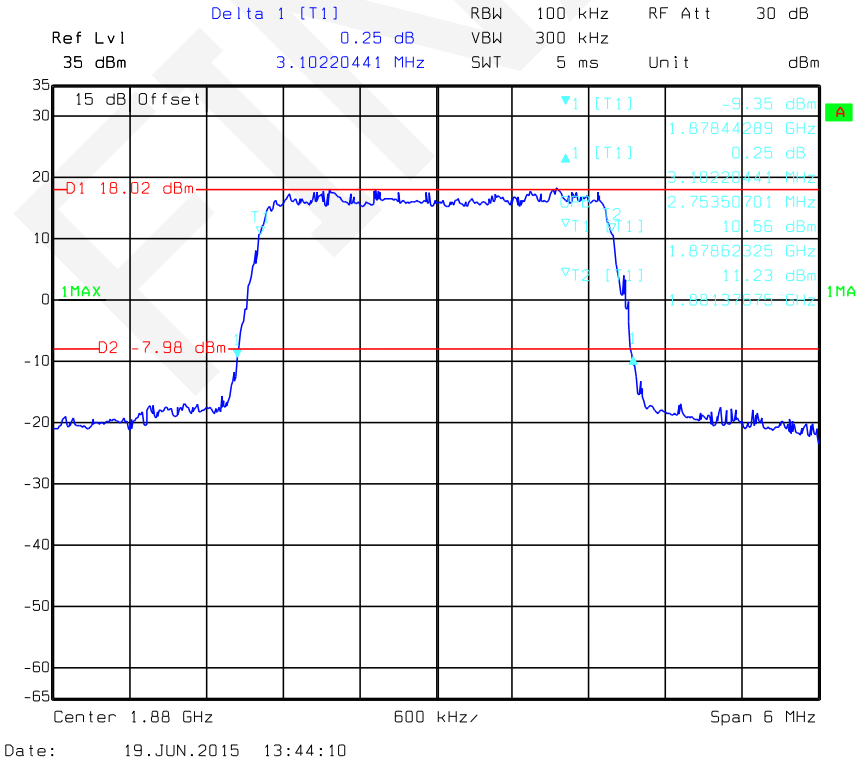
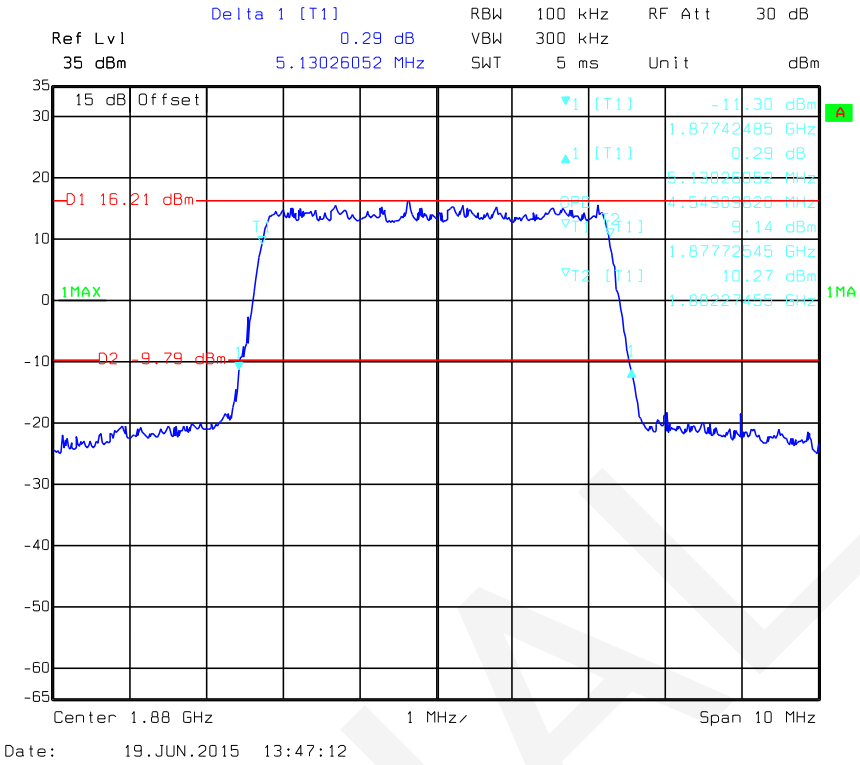
## 16QAM_1.4 MHz



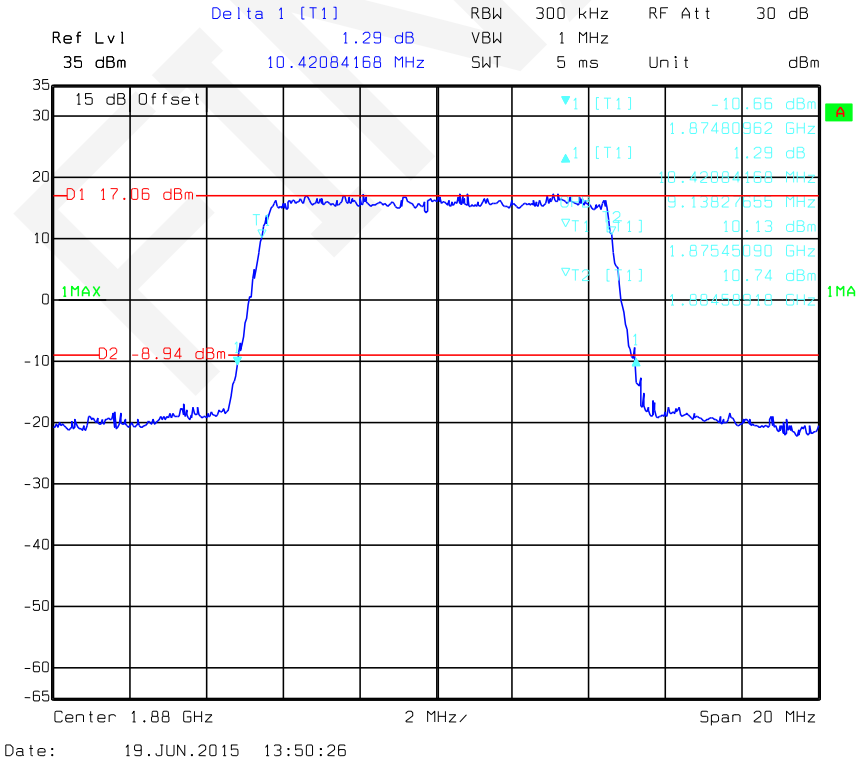

## 16QAM_3 MHz



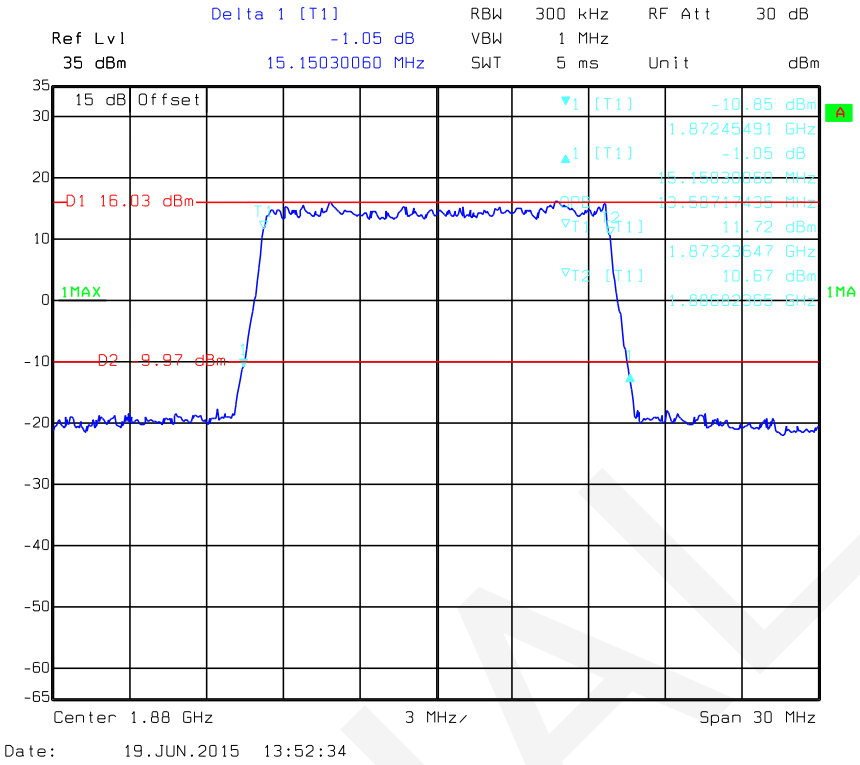
## 16QAM_5 MHz



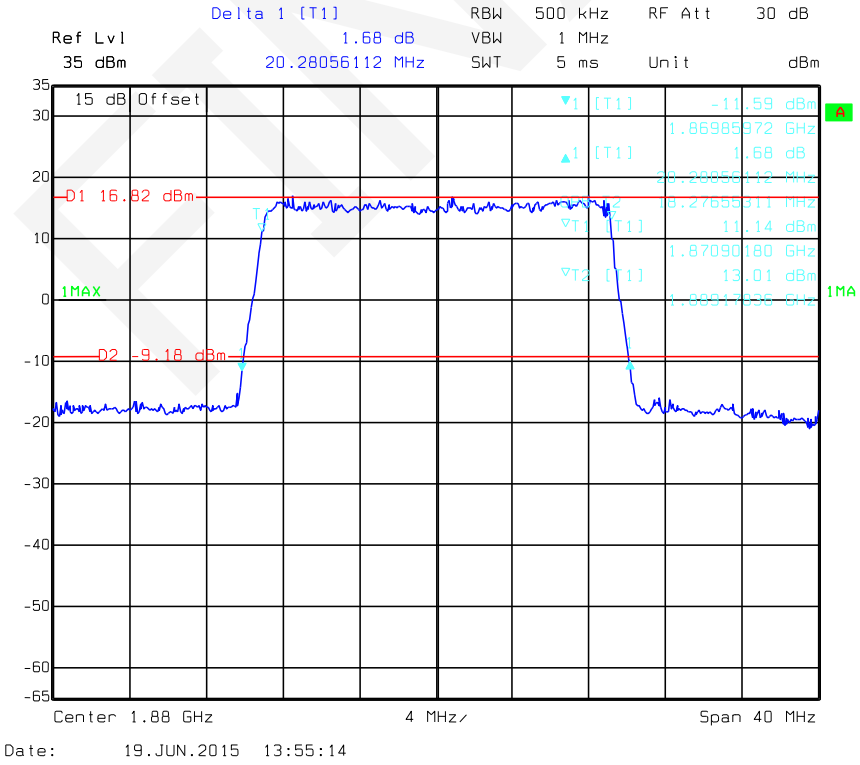

## 16QAM_10 MHz



## 16QAM_15 MHz

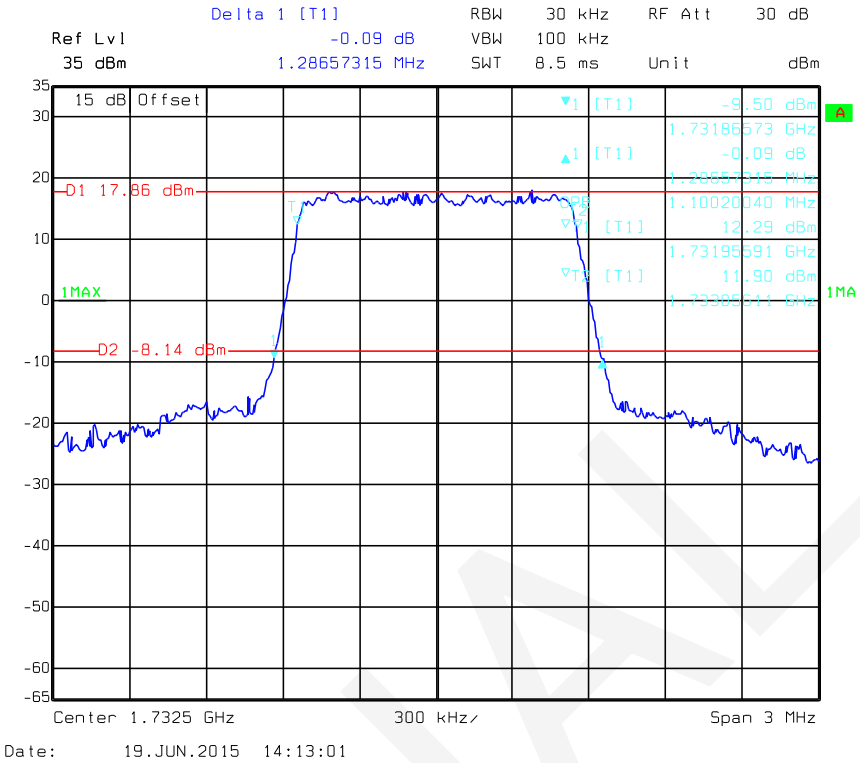



## 16QAM_20 MHz

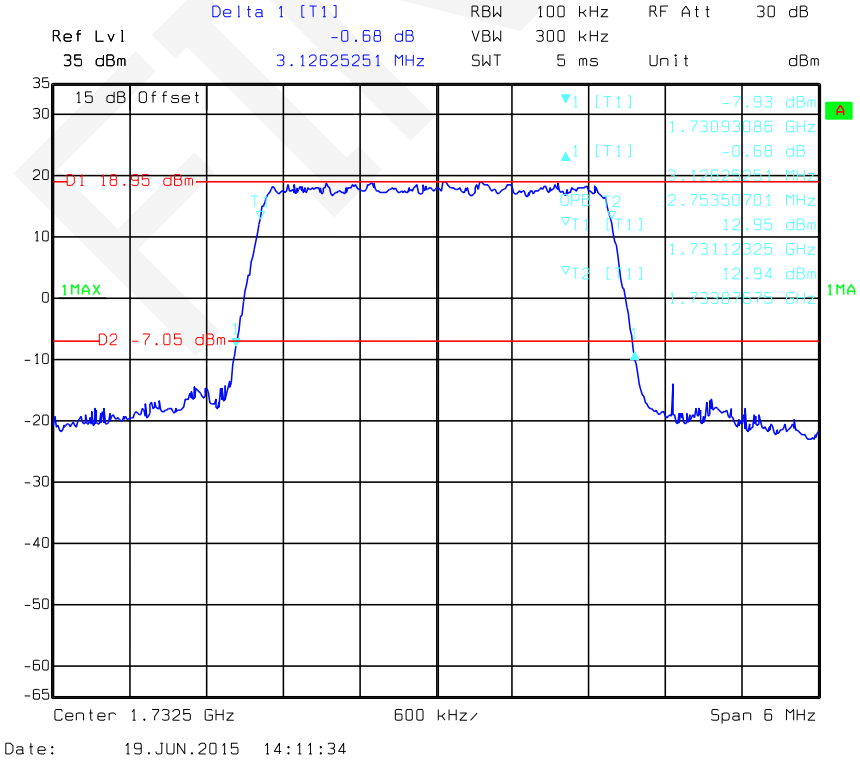


LTE Band 4

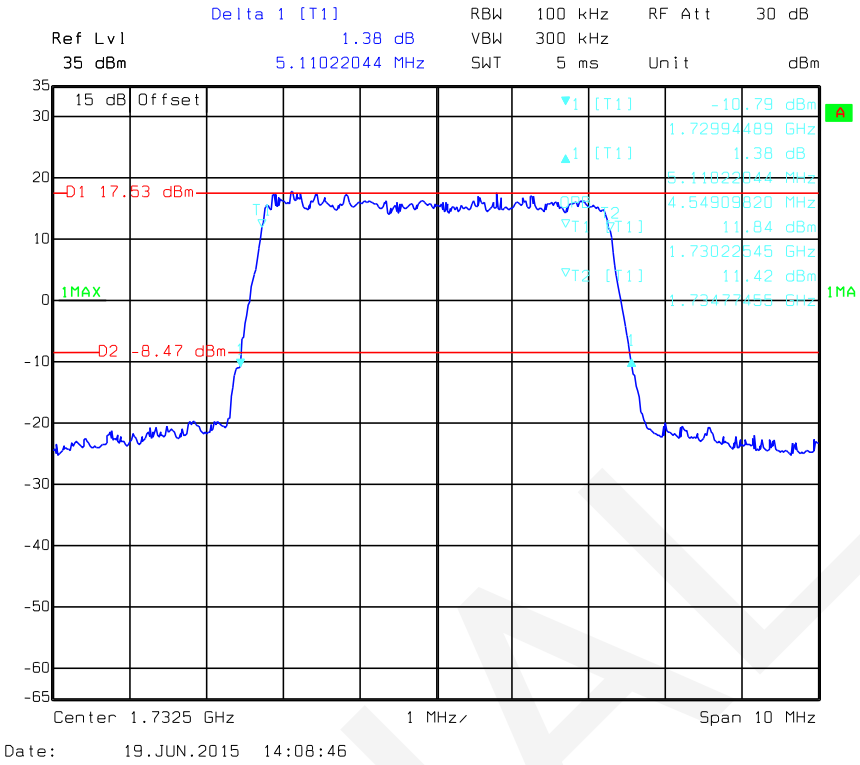
**QPSK_1.4 MHz**



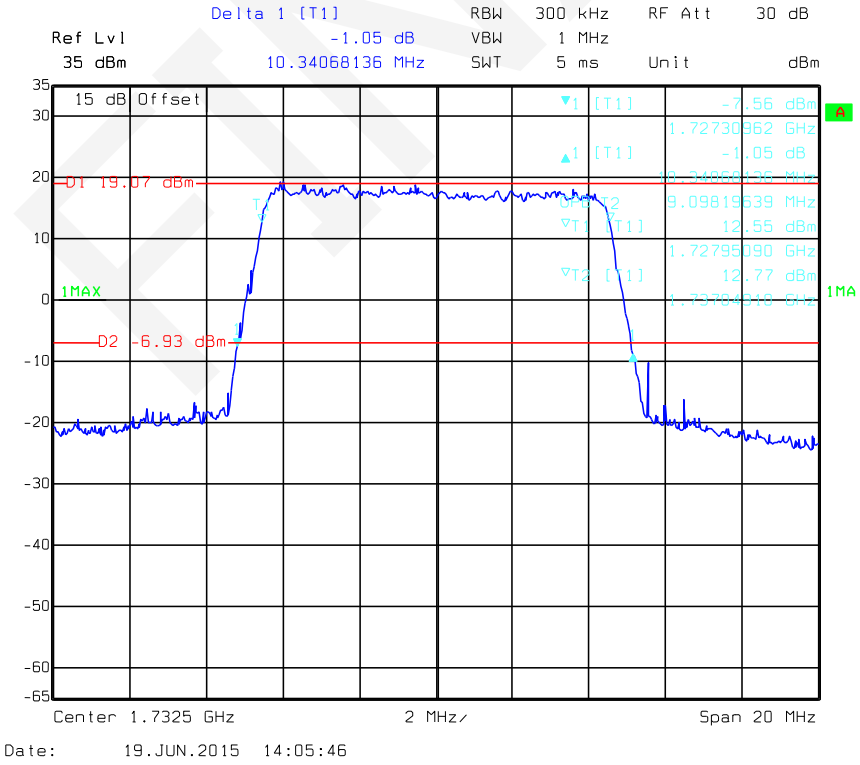

**QPSK_3 MHz**



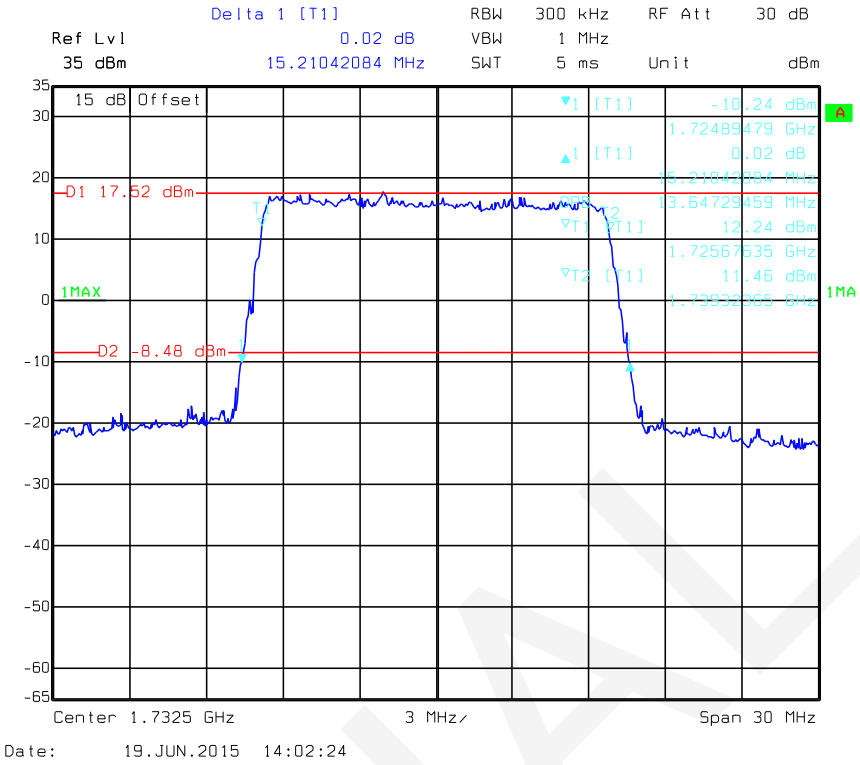
## QPSK_5 MHz



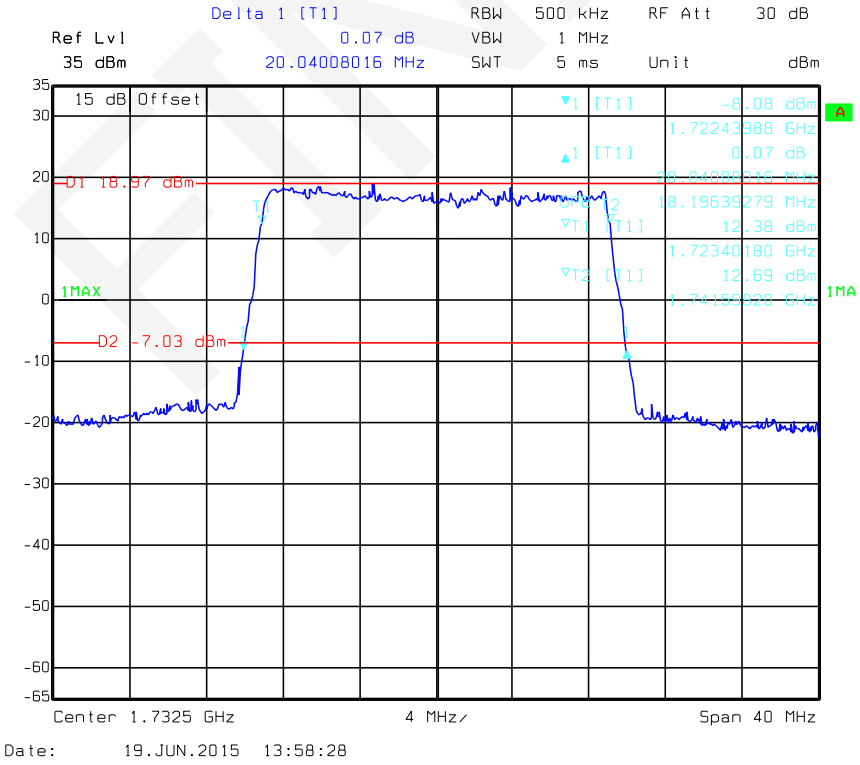

## QPSK_10 MHz



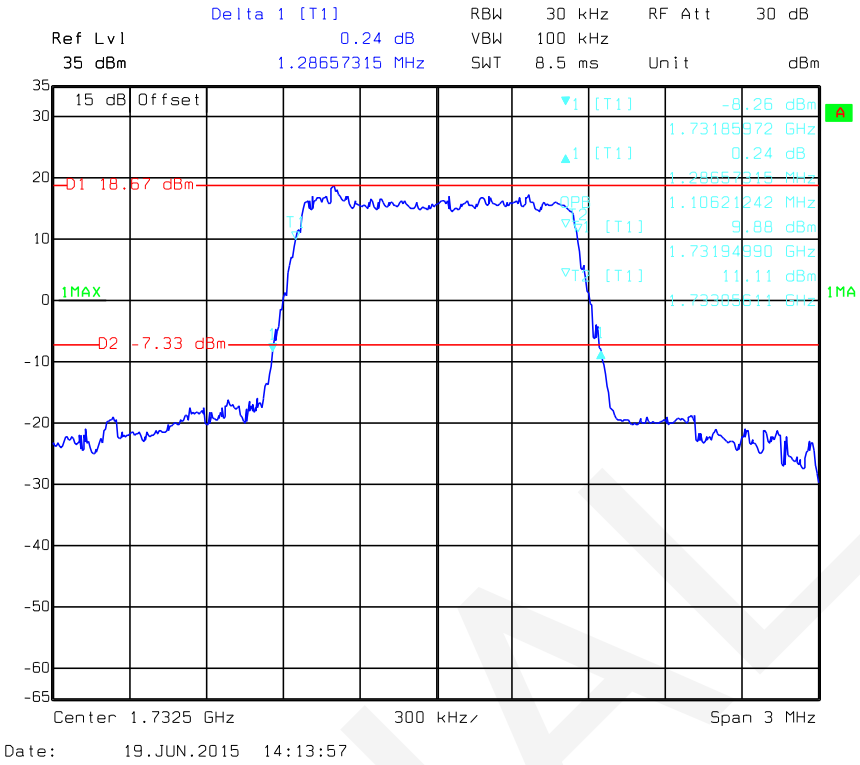
## QPSK_15 MHz



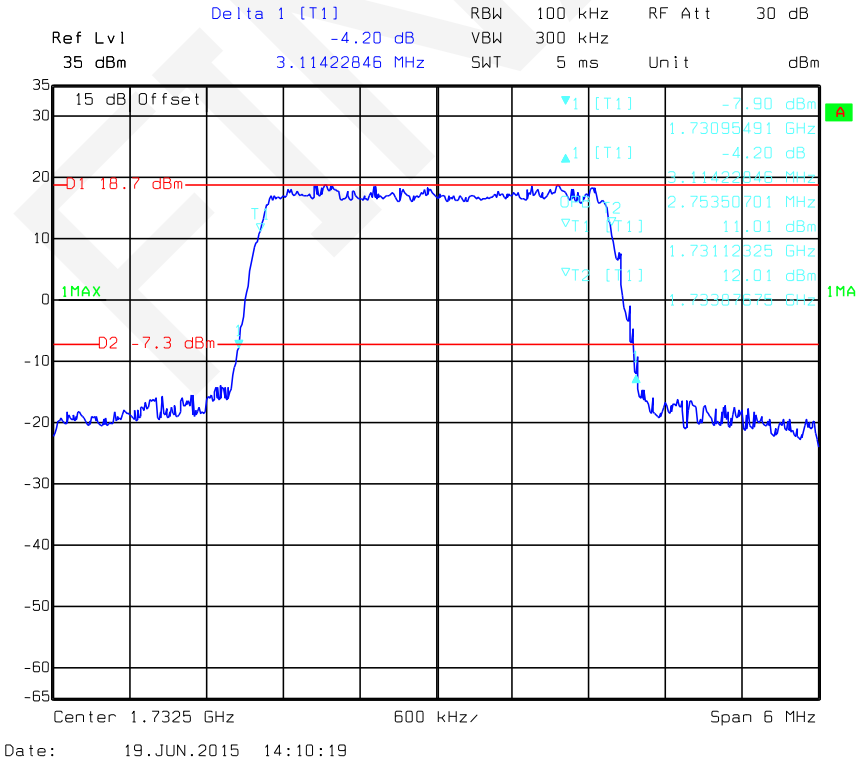

## QPSK_20 MHz



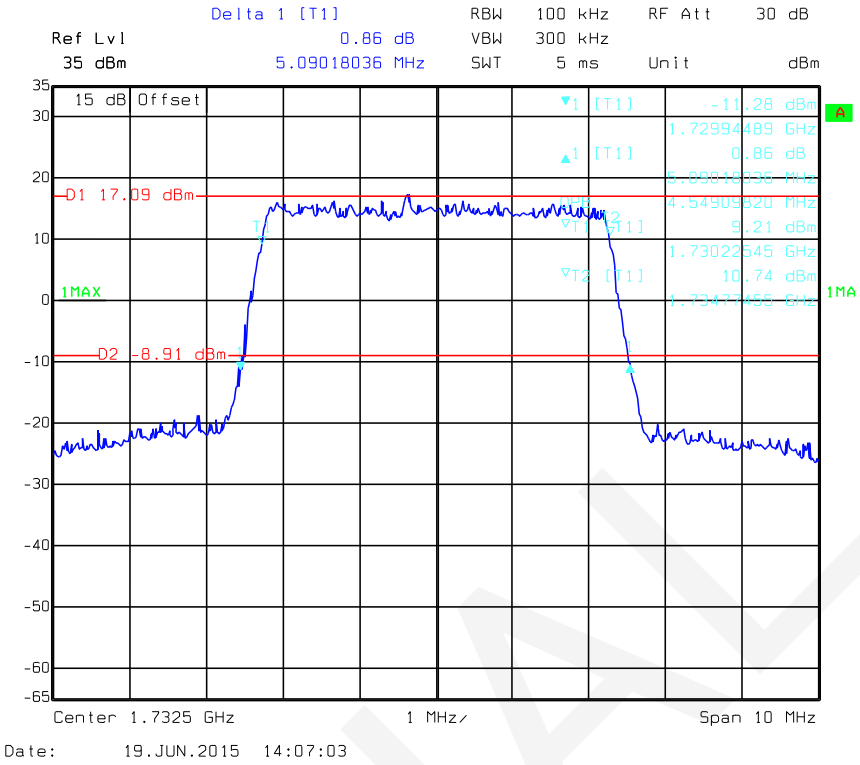
## 16QAM_1.4 MHz



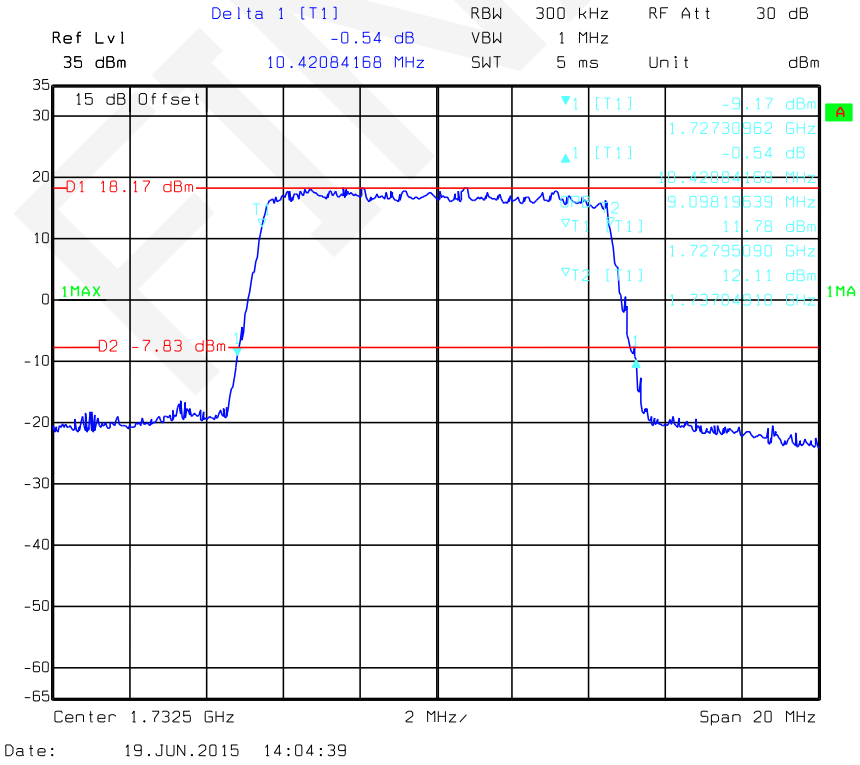

## 16QAM_3 MHz



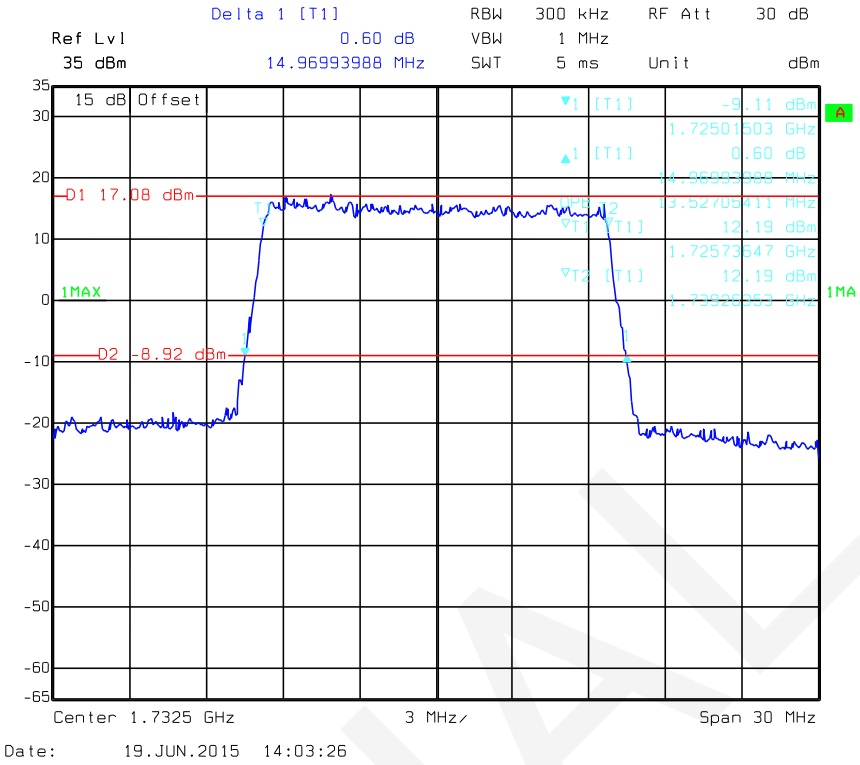
## 16QAM_5 MHz



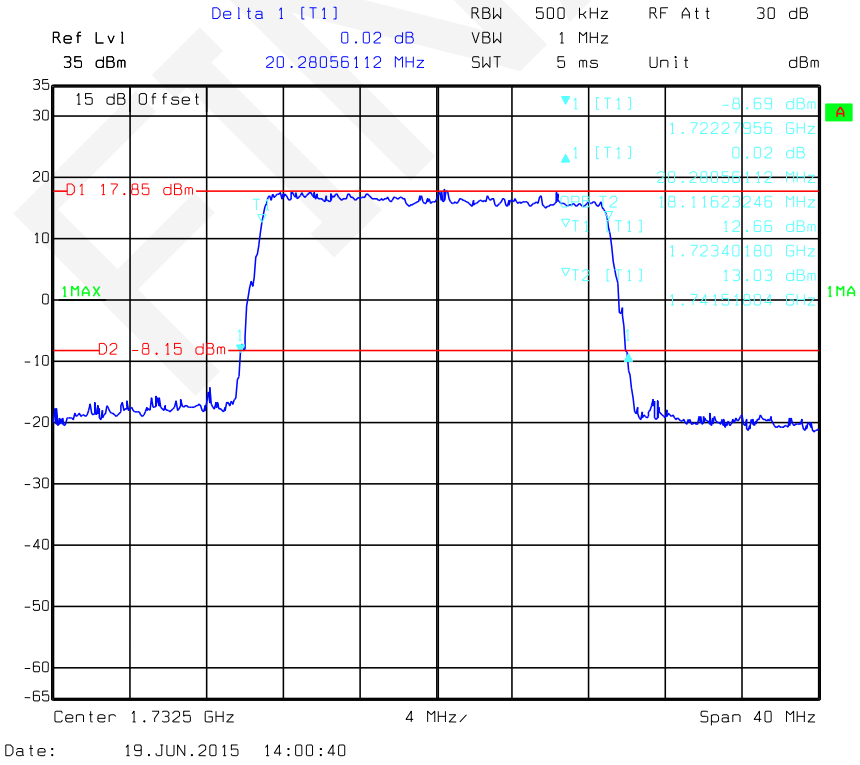

## 16QAM_10 MHz



## 16QAM_15 MHz

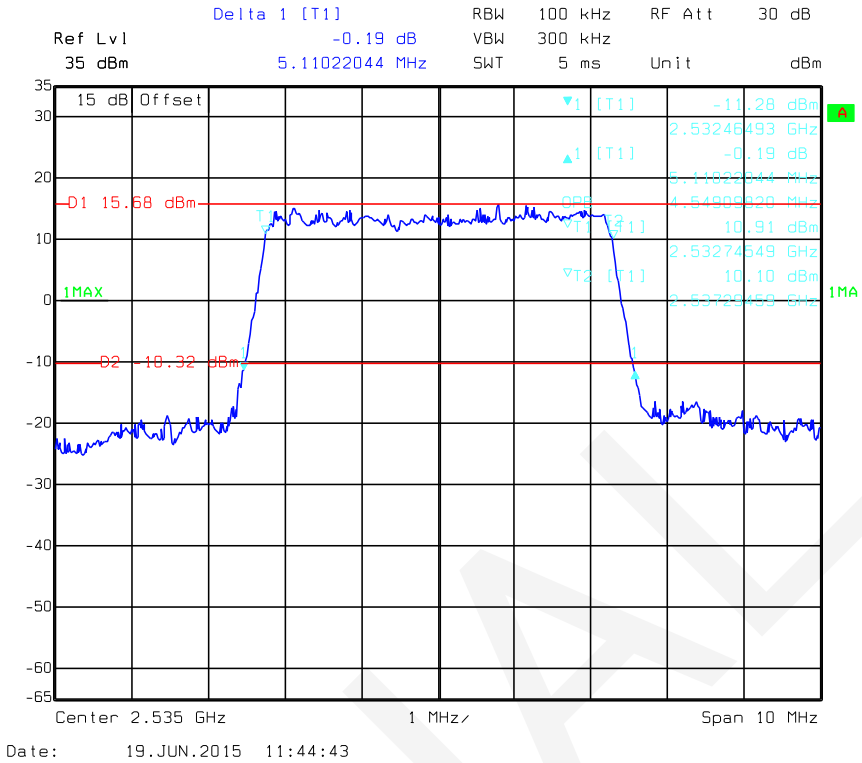



## 16QAM_20 MHz

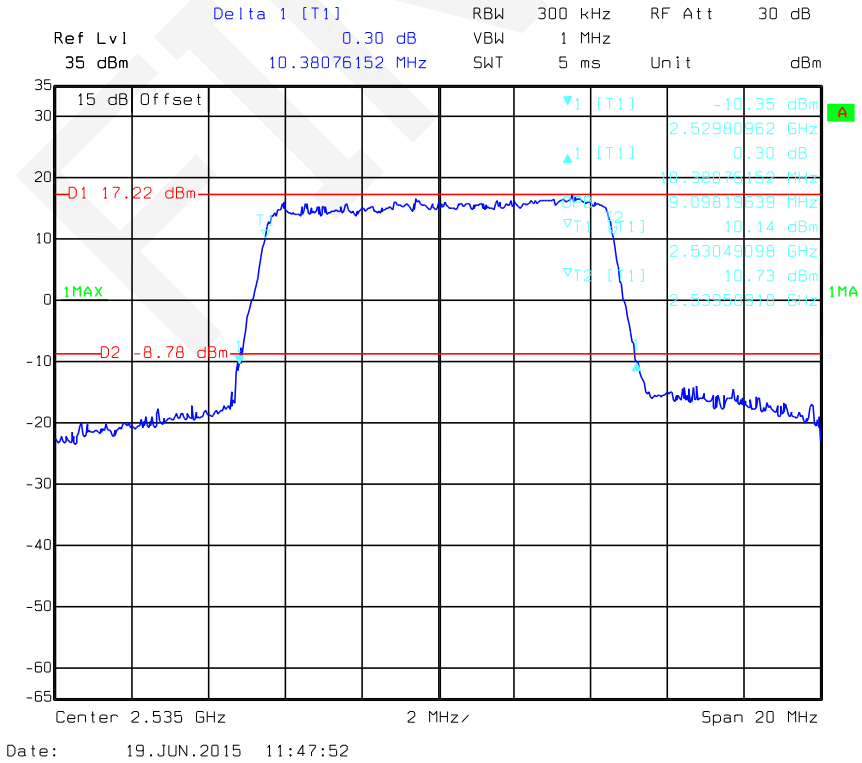


LTE Band 7

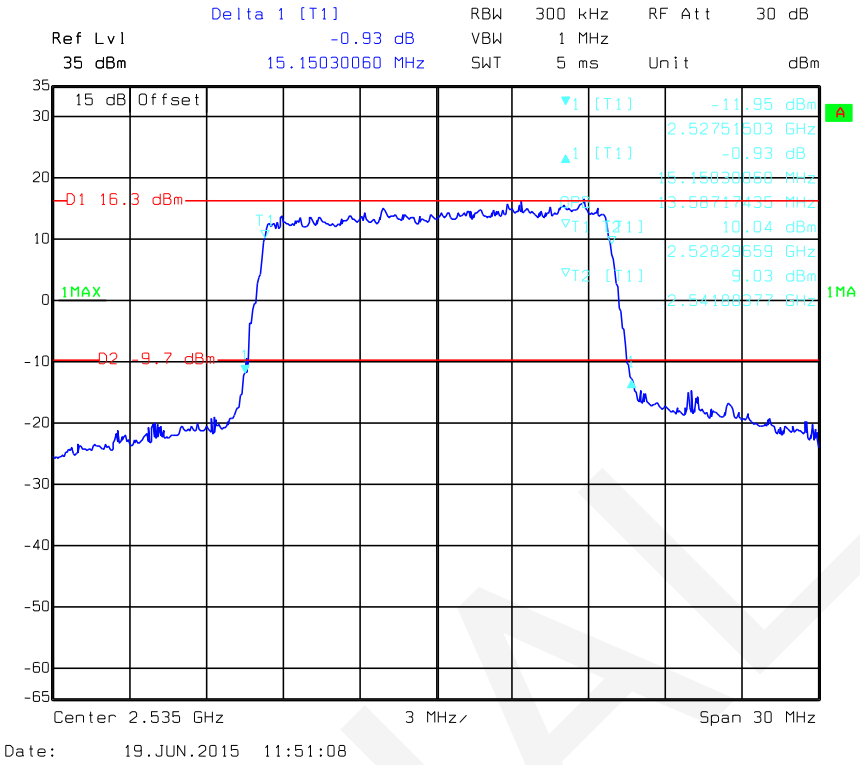
**QPSK_5 MHz**




**QPSK_10 MHz**

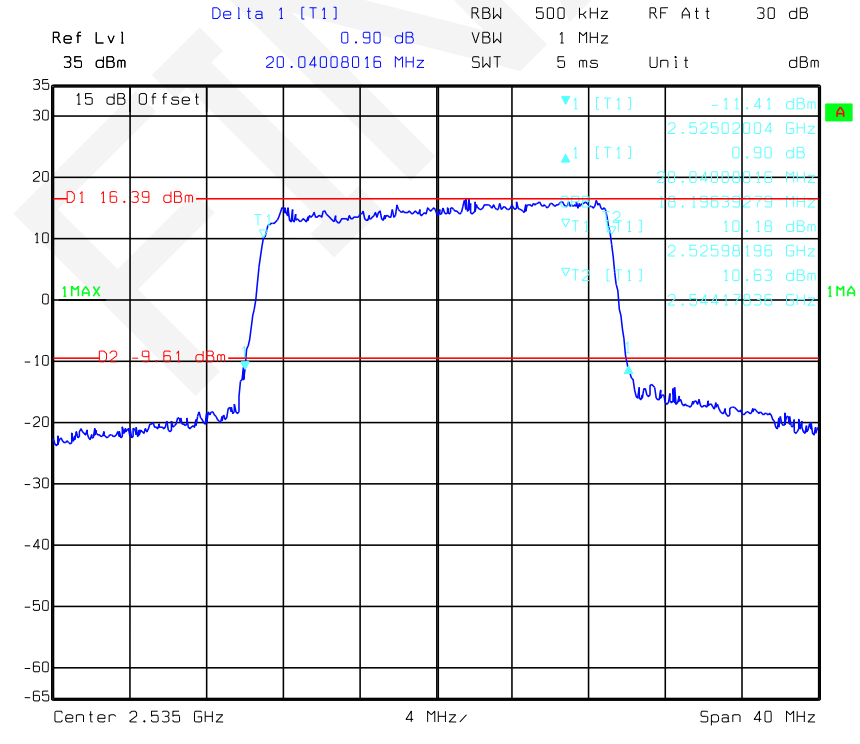


## QPSK_15 MHz



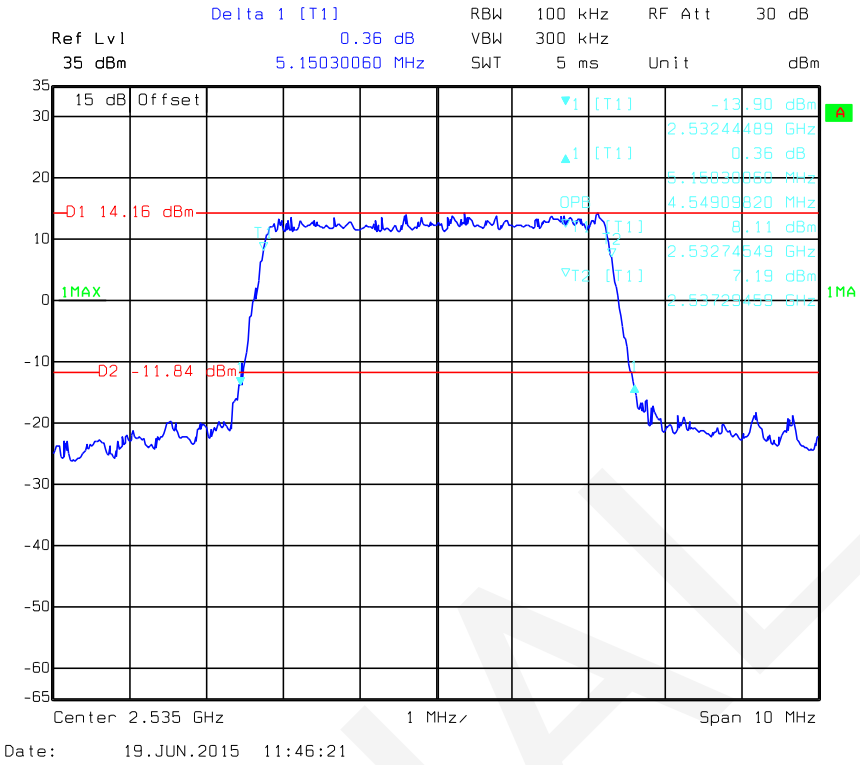

Date: 19.JUN.2015 11:51:08

## QPSK_20 MHz

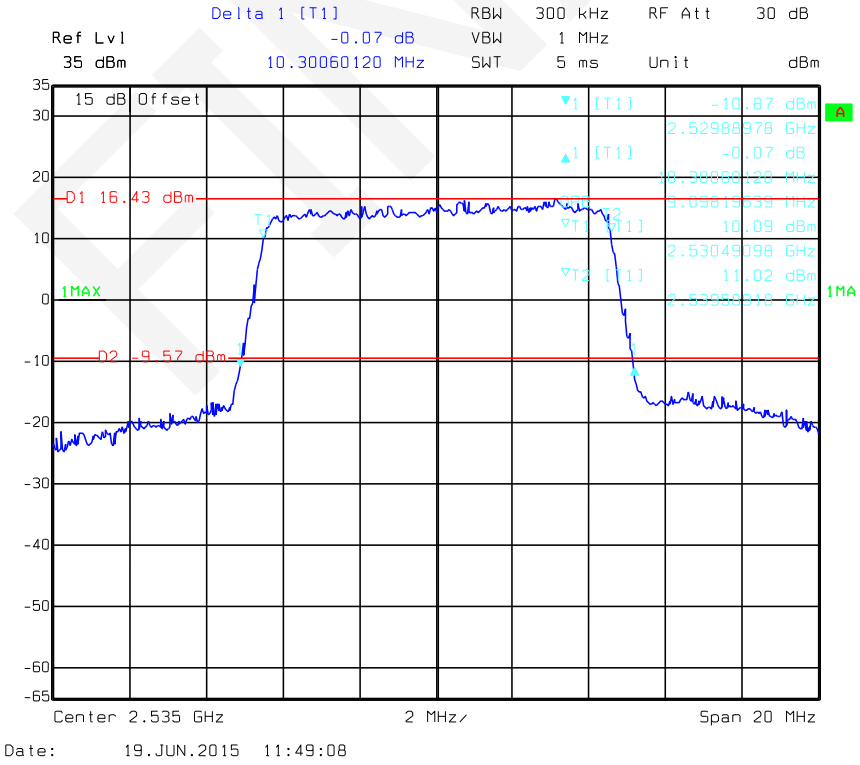



Date: 19.JUN.2015 11:55:33

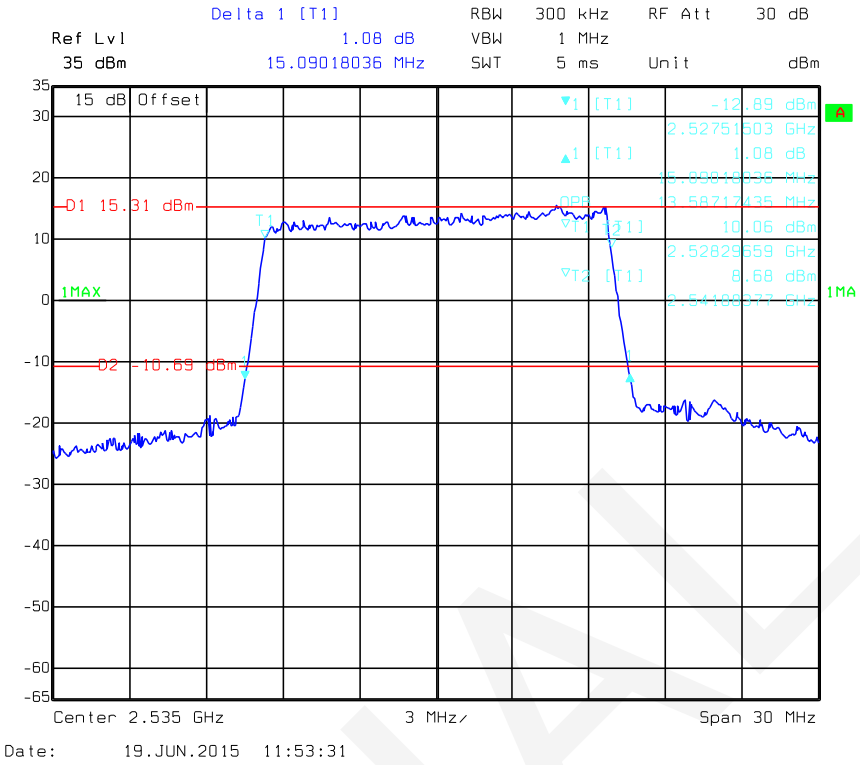
## 16QAM_5 MHz



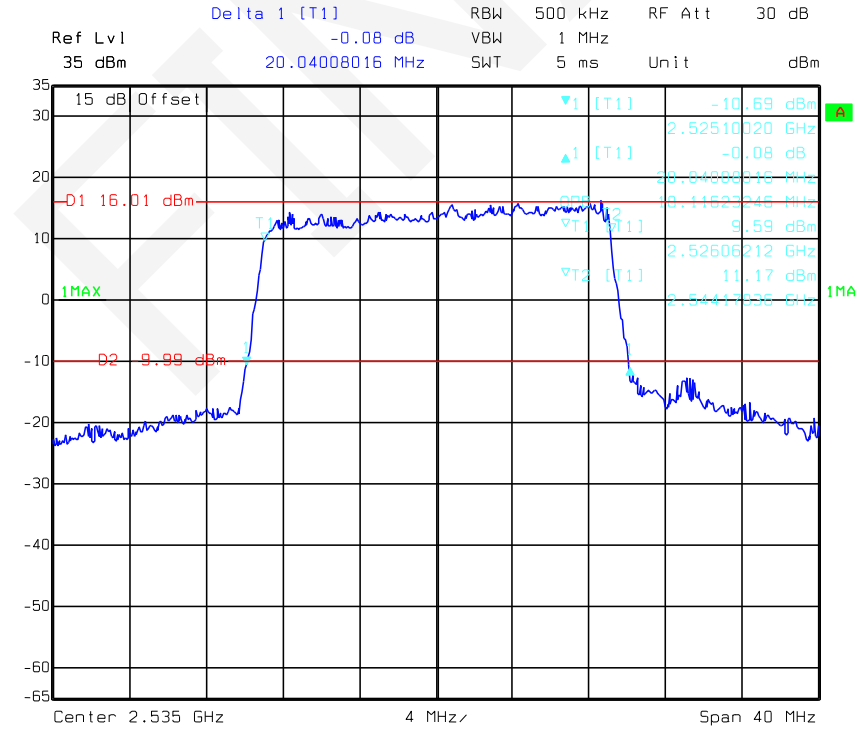

## 16QAM_10 MHz



## 16QAM_15 MHz

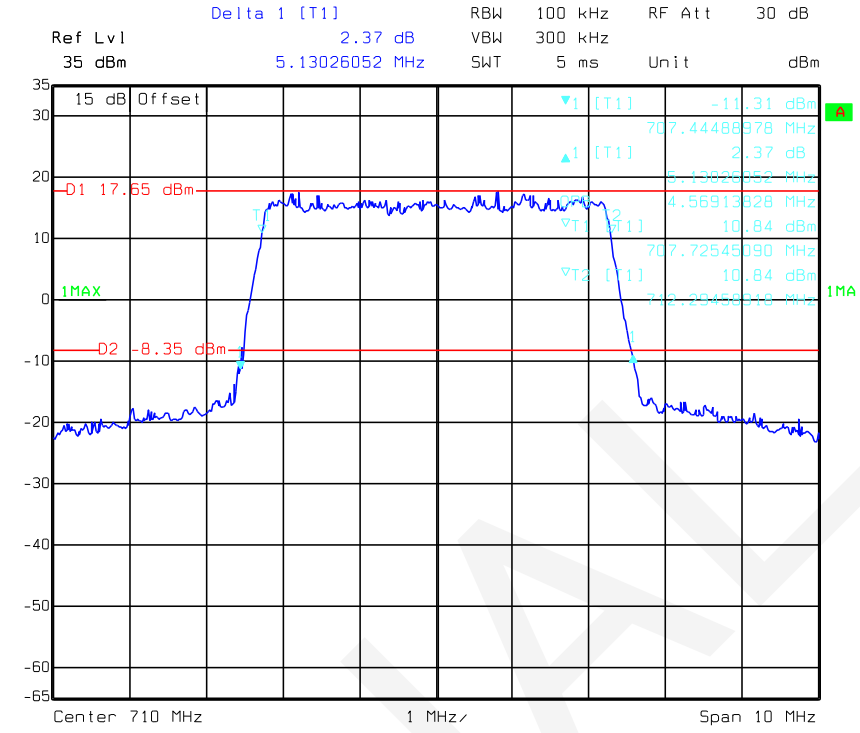



## 16QAM_20 MHz

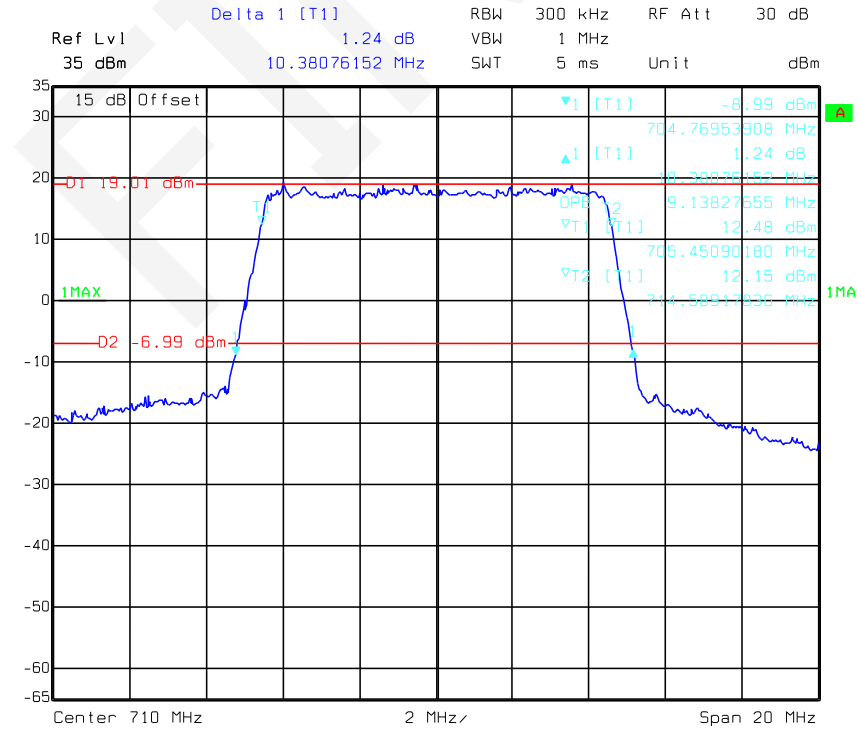


LTE Band 17

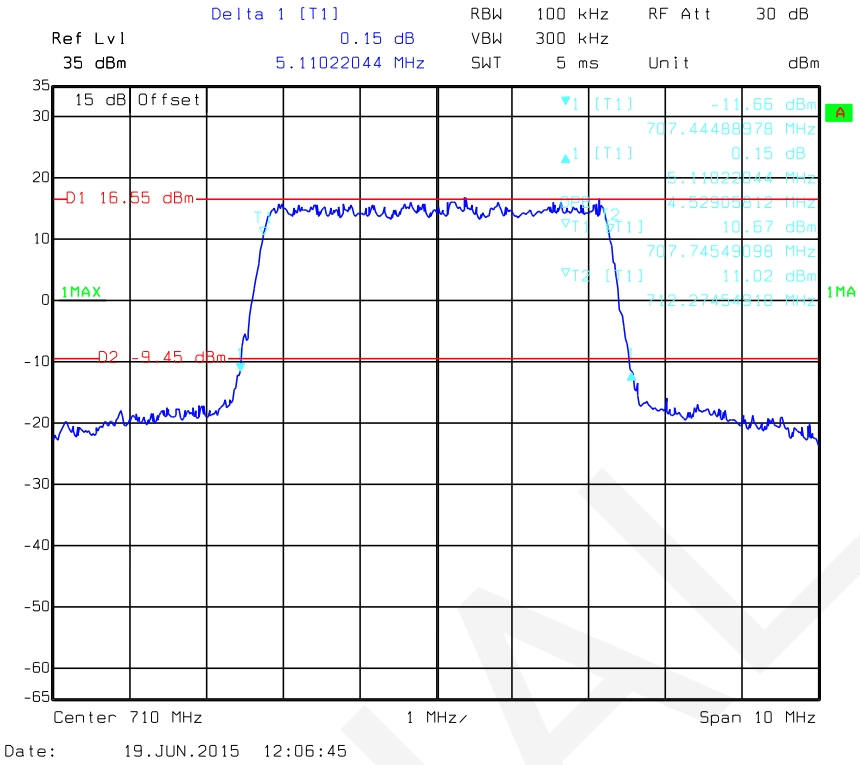
**QPSK_5 MHz**



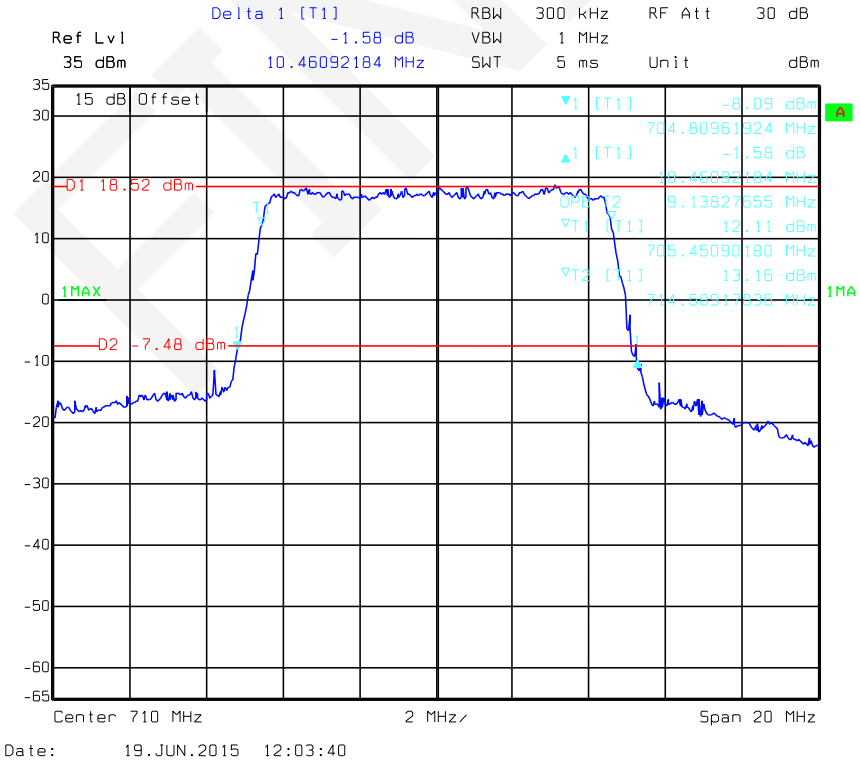

**QPSK_10 MHz**



## 16QAM_5 MHz




## 16QAM_10 MHz



# FCC §2.1051, §22.917(a) & §24.238(a) & § 7.53- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

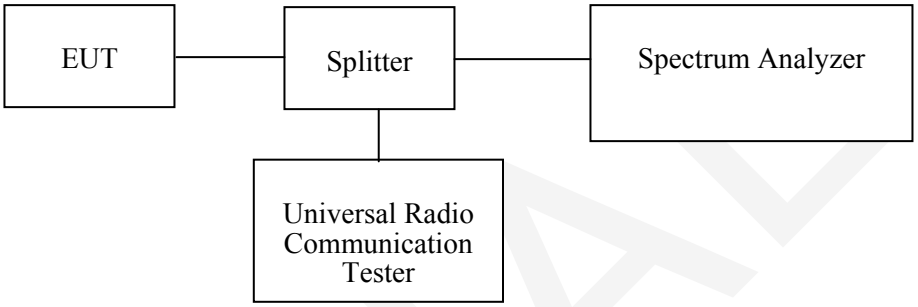
## Applicable Standard

FCC §2.1051, §22.917(a) , §24.238(a) and §27.53.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

## Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.




## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | Spectrum Analyzer | FSP 38 | 100478 | 2015-05-09 | 2016-05-09 |

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

## Test Data

### Environmental Conditions

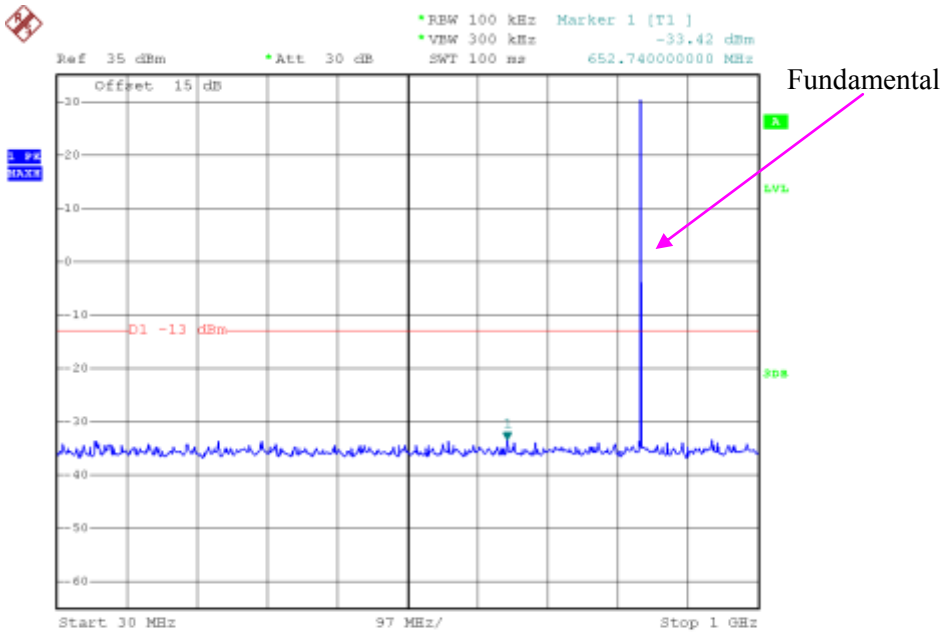
| | |
|---|---|
| **Temperature:** | 25.4-25.7 °C |
| **Relative Humidity:** | 53-57% |
| **ATM Pressure:** | 100kPa |

*The testing was performed by Lion Xiao on 2015-06-12 and 2015-06-19*

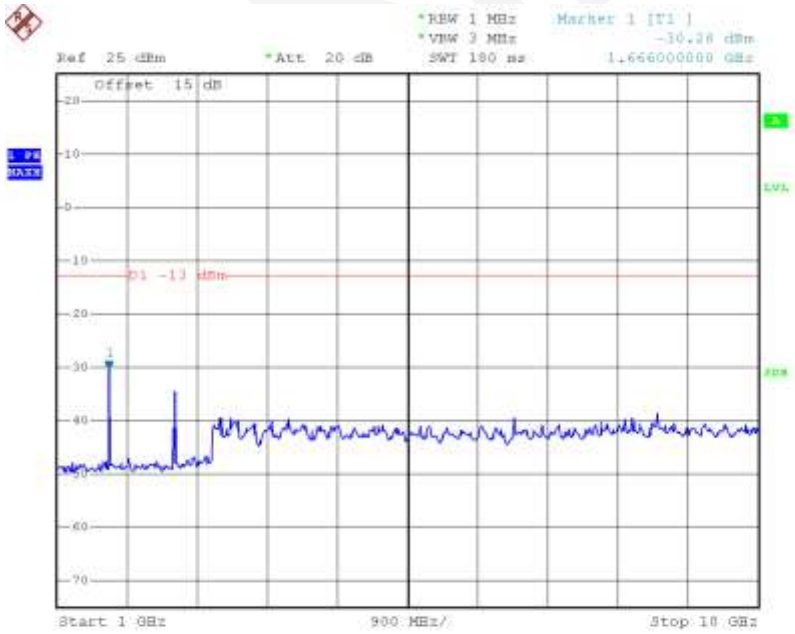
Please refer to the following plots.

**PART 22H**

**GSM850_Middle Channel**



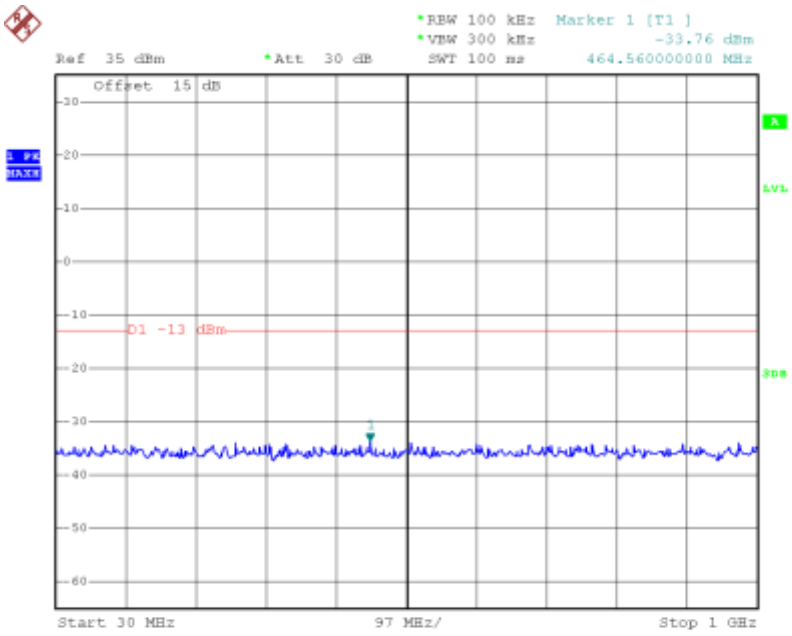

Date: 12.JUN.2015 17:22:59



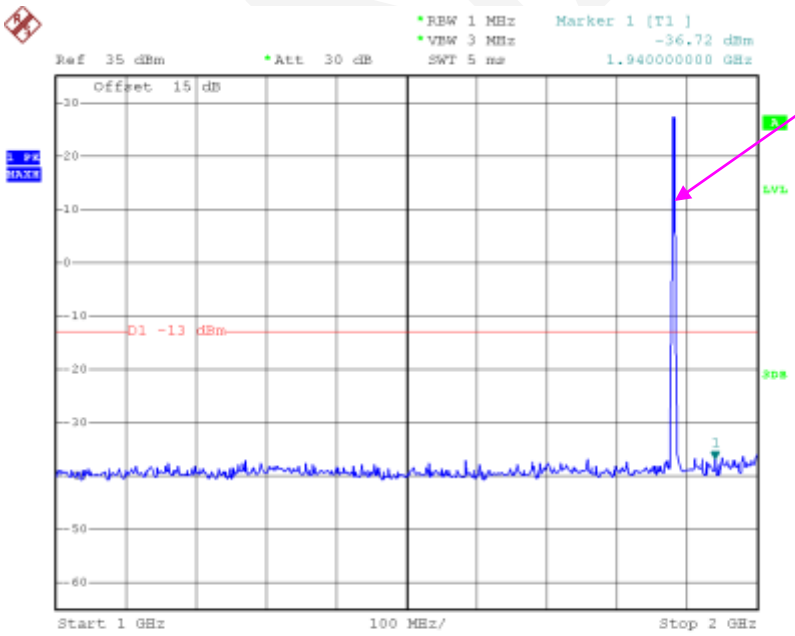

Date: 12.JUN.2015 17:25:01

PART 24E

**PCS 1900_ Middle Channel**




Date: 12.JUN.2015 17:35:12

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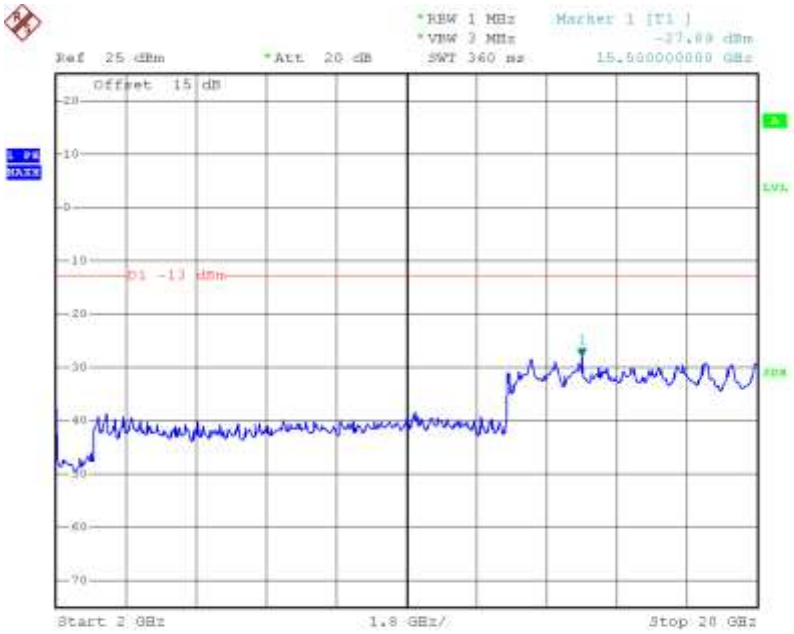
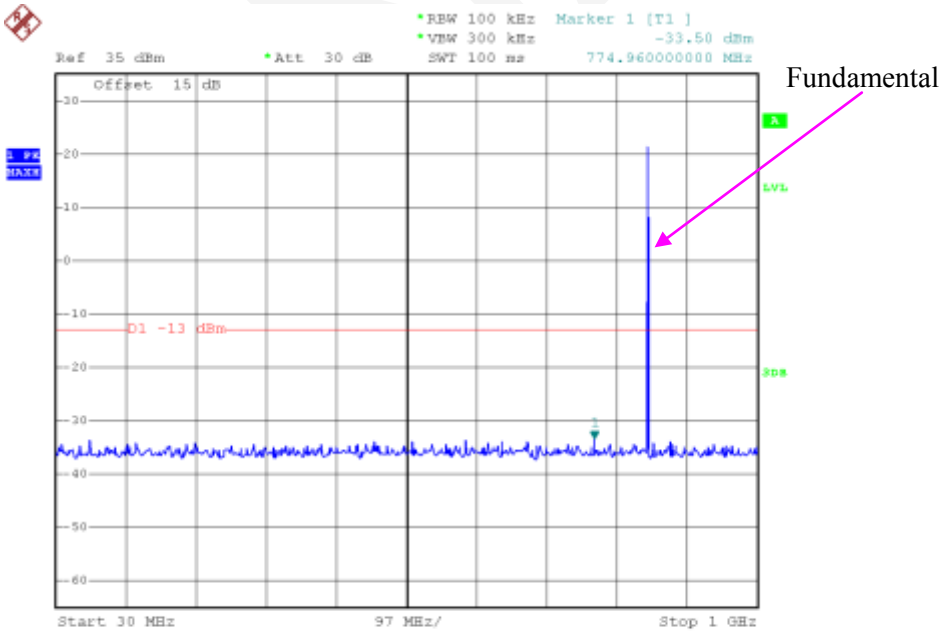
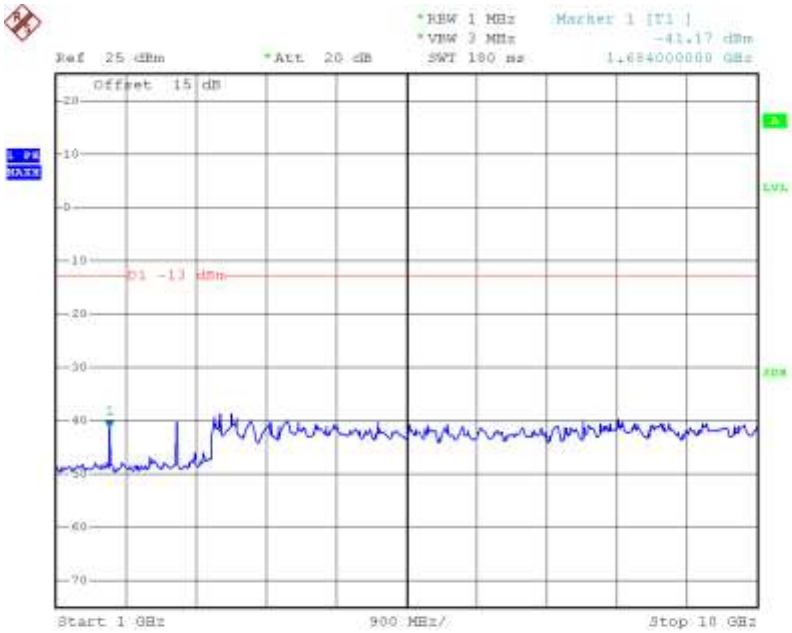



**PART 22H**

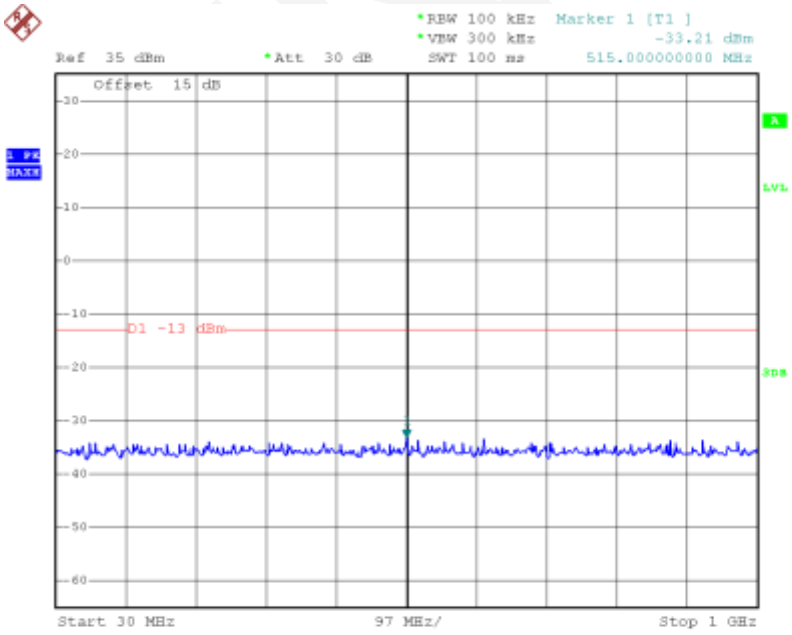
**EDGE850_Middle Channel**

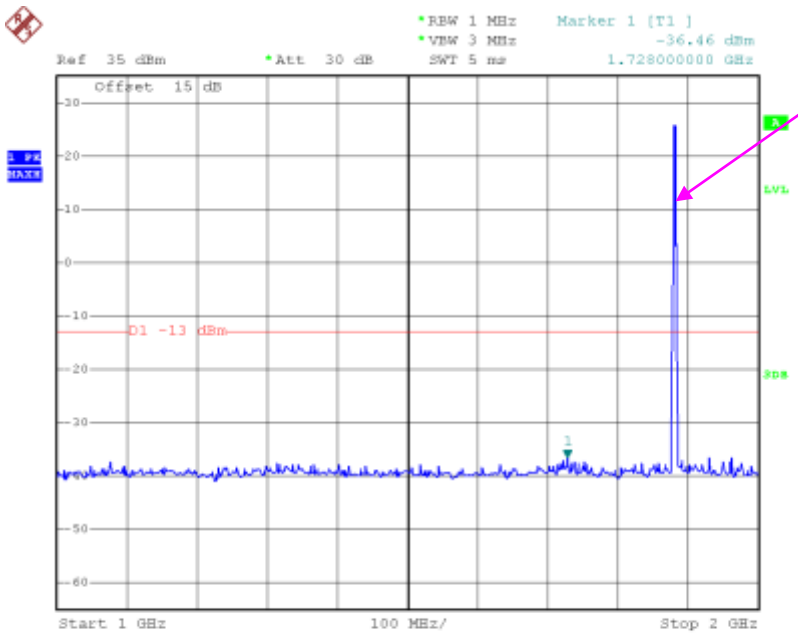





PART 24E

**EDGE 1900_ Middle Channel**



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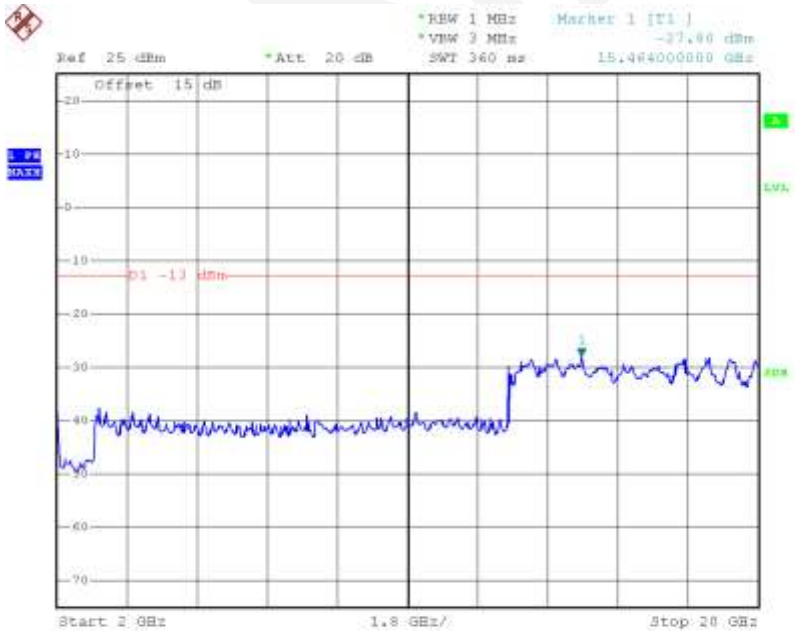
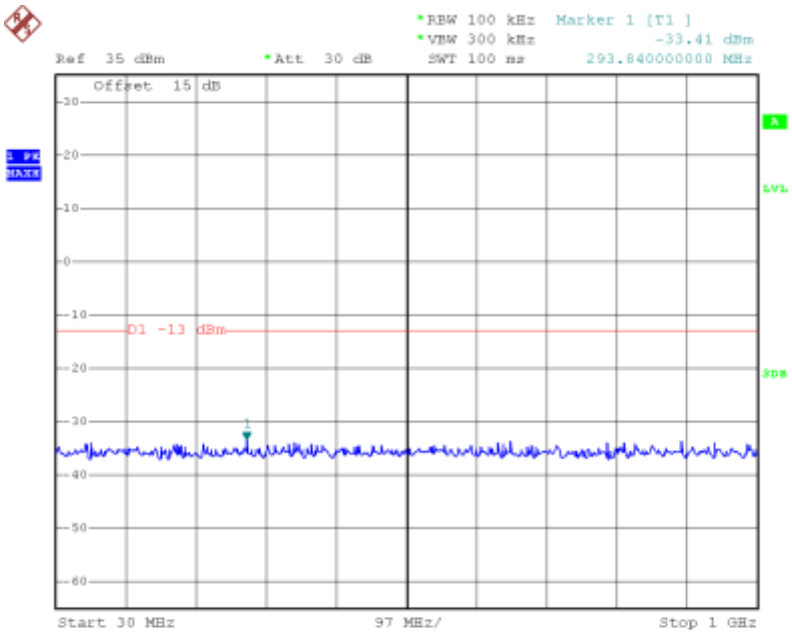


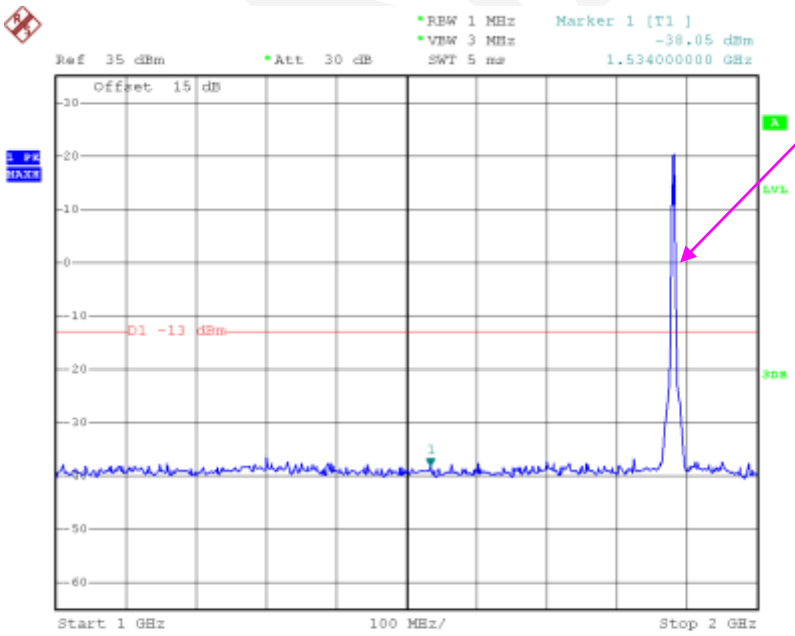

Date: 12.JUN.2015 17:56:54

PART 24E

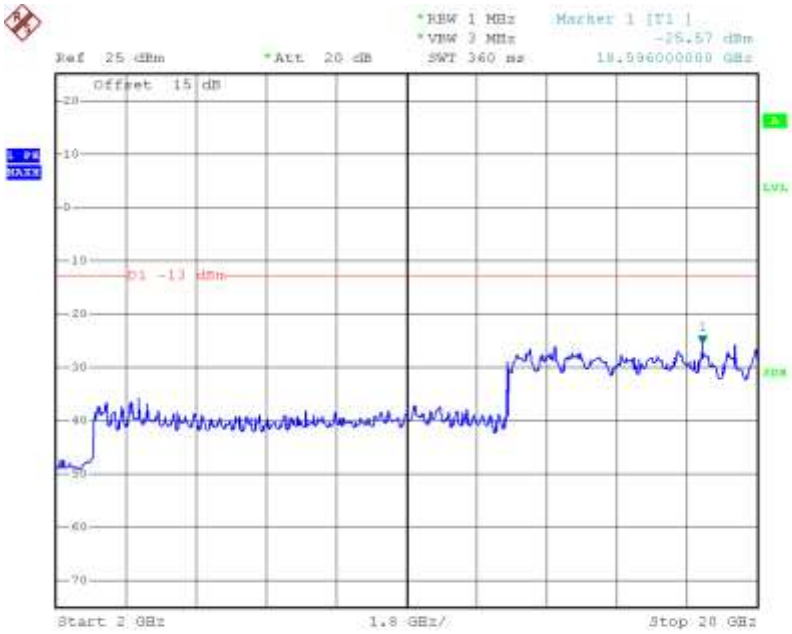
**REL99 Band II_ Middle Channel**




Date: 12.JUN.2015 18:34:47

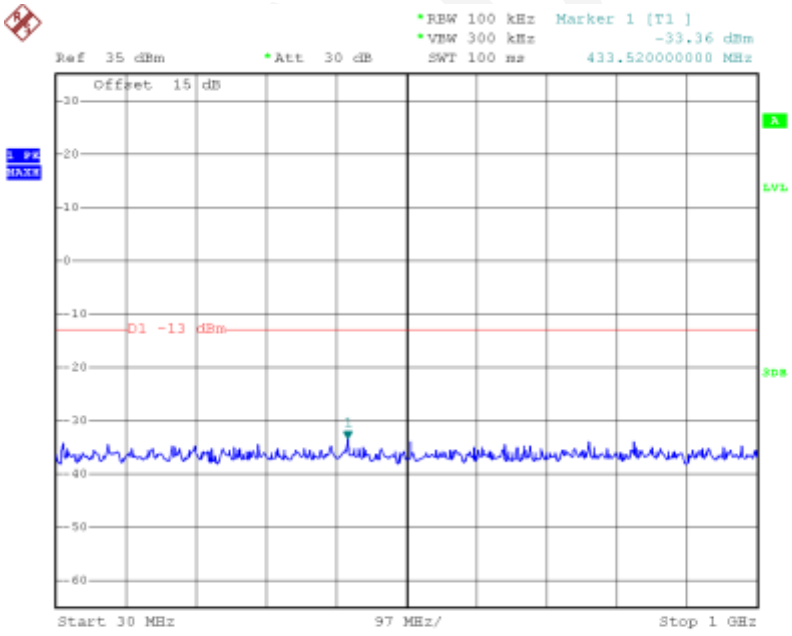



Date: 12.JUN.2015 18:41:43




Date: 12.JUN.2015 18:50:08

**HSDPA Band II _Middle Channel**

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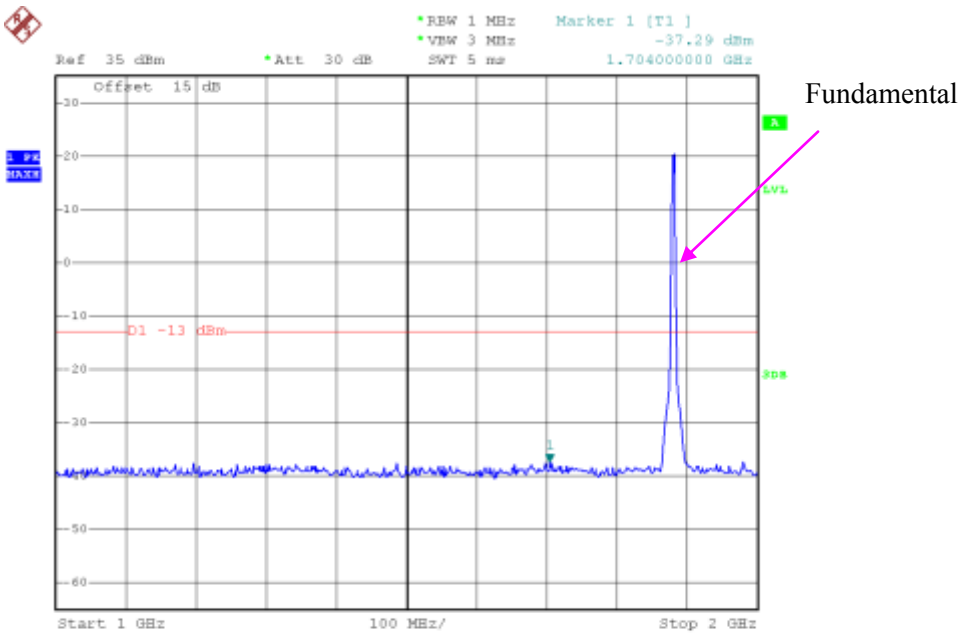


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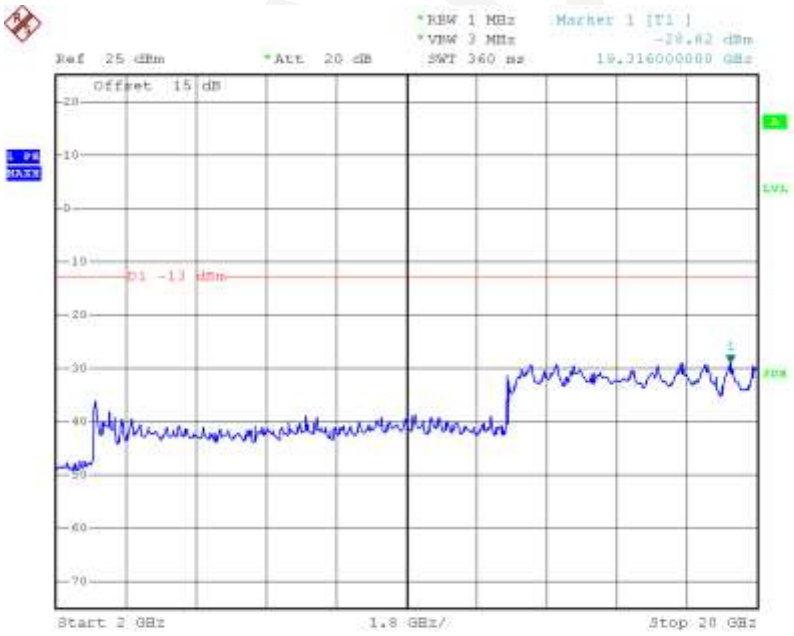
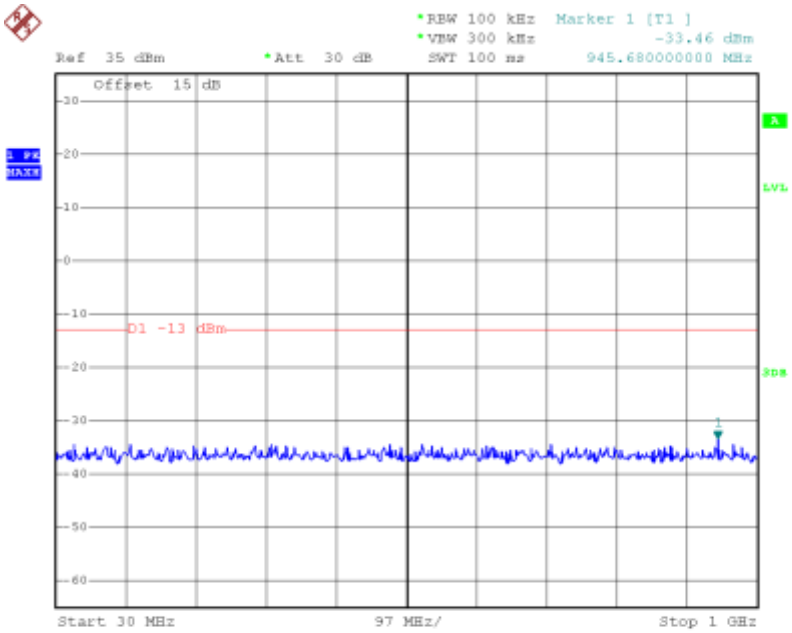



Date: 12.JUN.2015 18:53:39

**HSUPA Band II _ Middle Channel**

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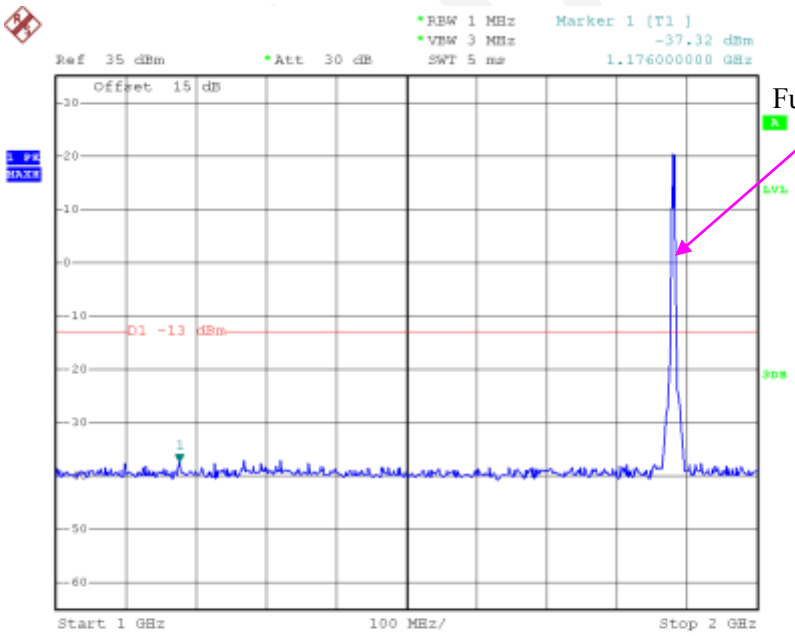


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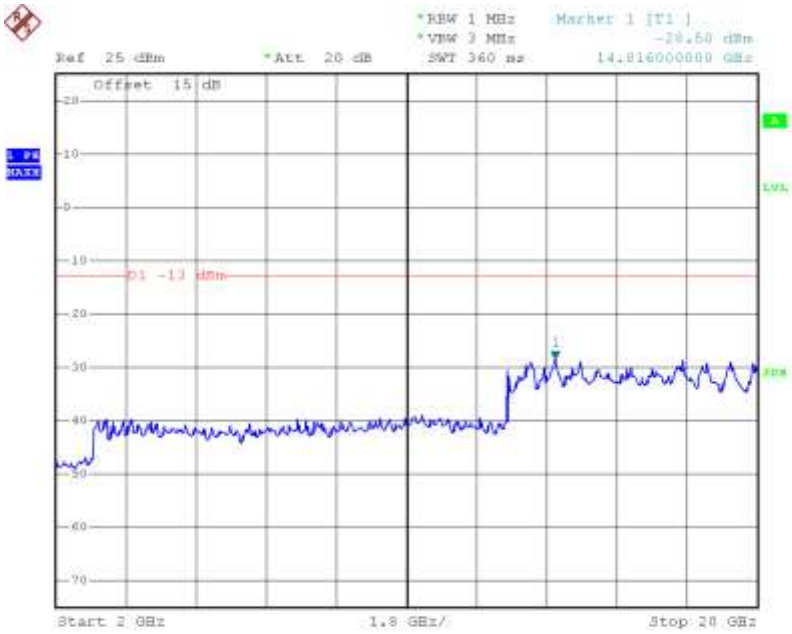
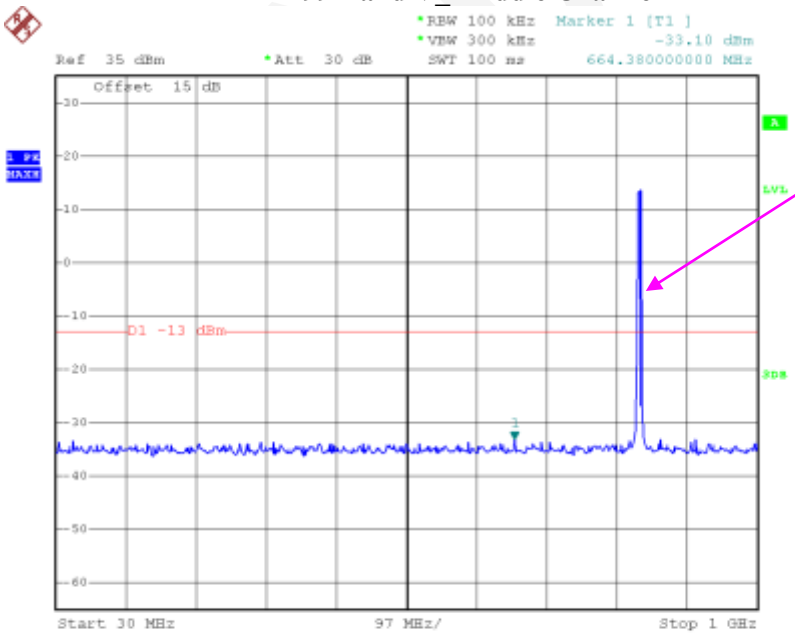



Date: 12.JUN.2015 18:57:58

**PART 22H**
**REL99 Band V_ Middle Channel**

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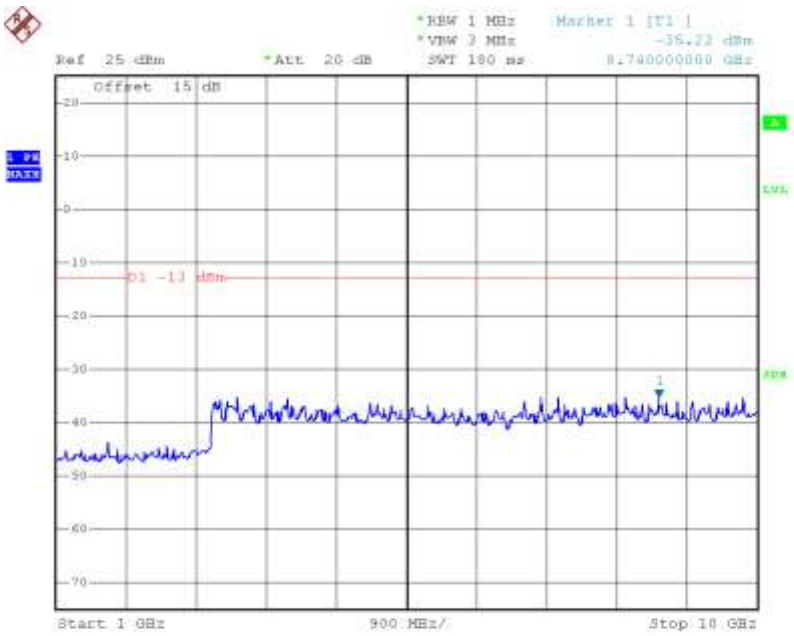
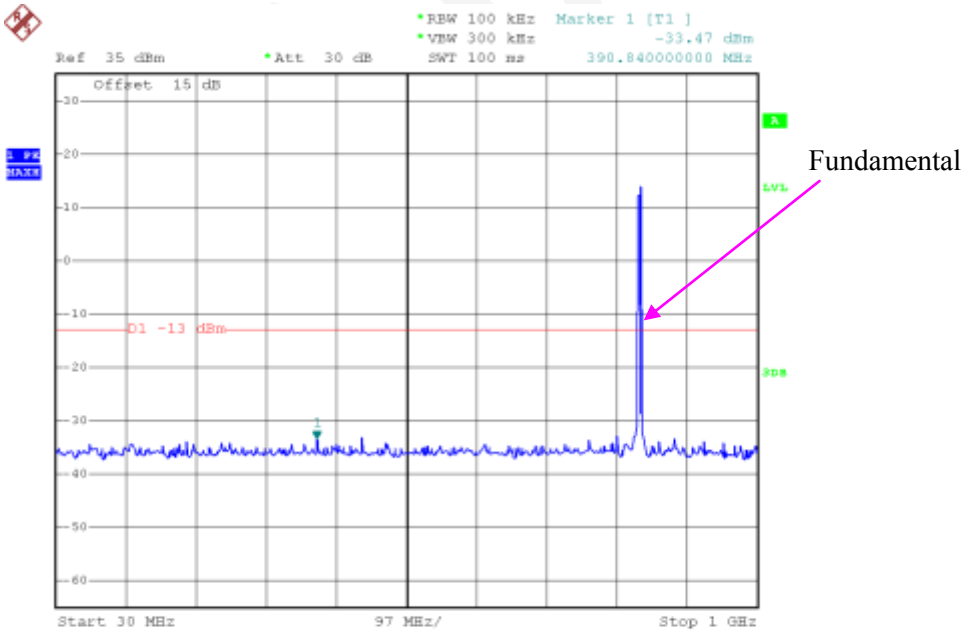



Date: 12.JUN.2015 20:34:23

**HSDPA Band V_ Middle Channel**

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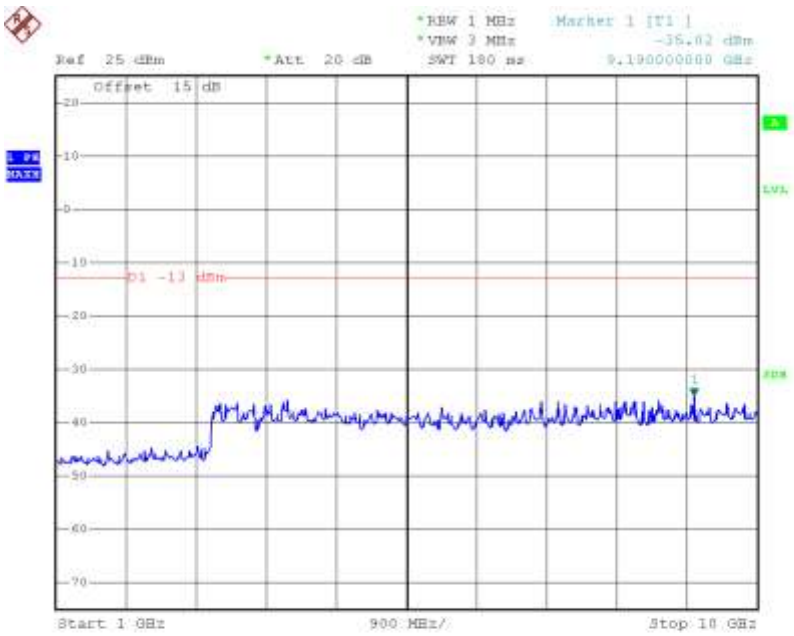
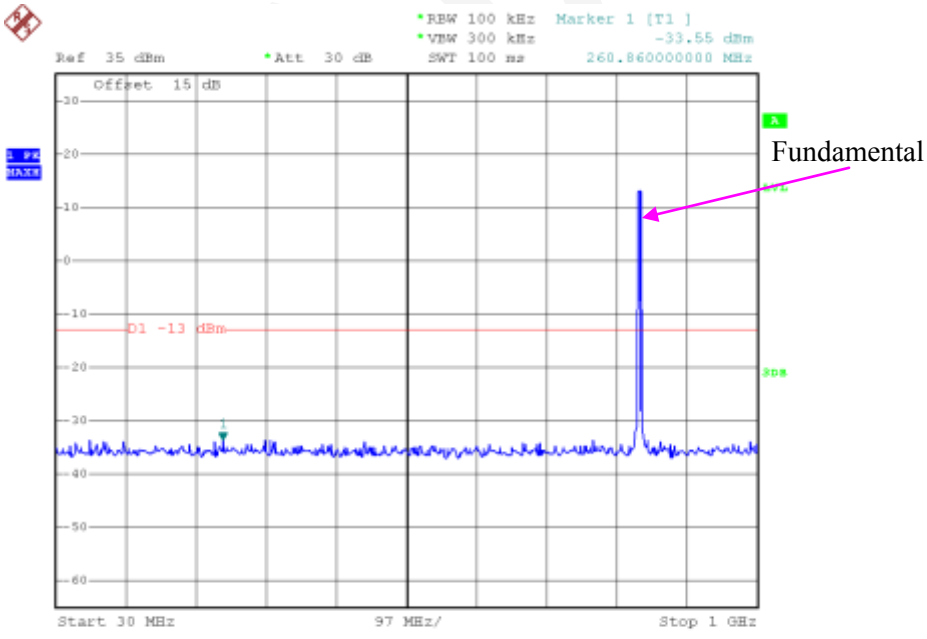



Date: 12.JUN.2015 20:38:44

**HSUPA Band V_ Middle Channel**

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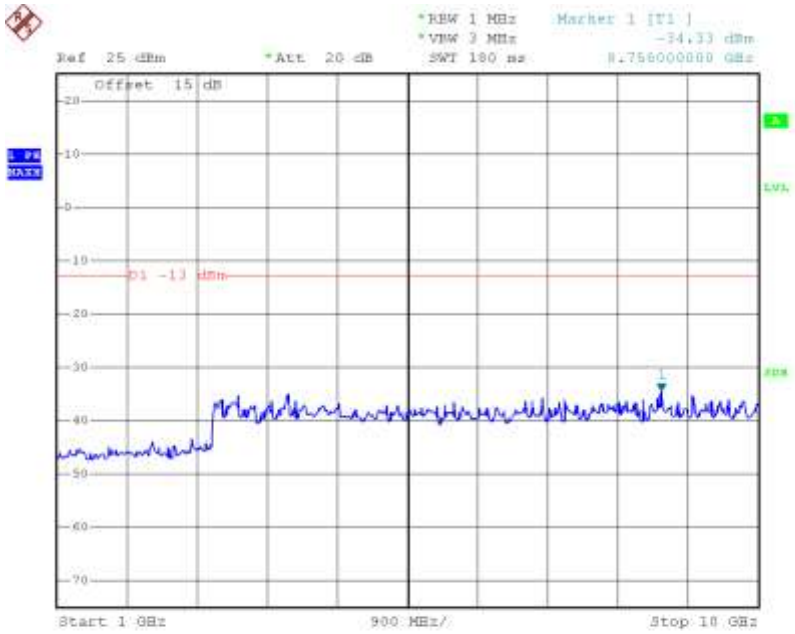
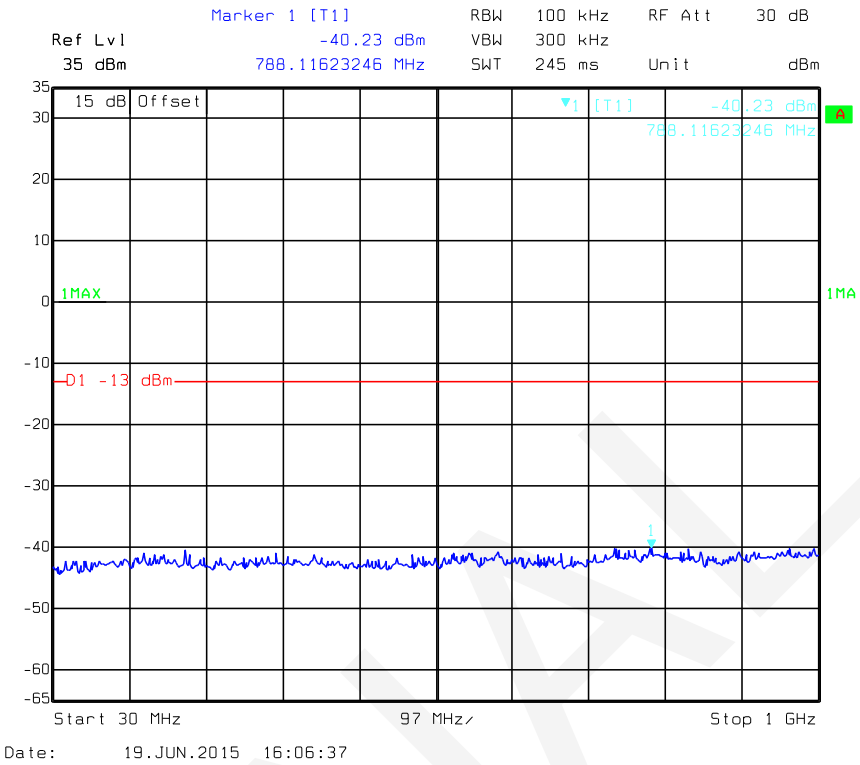


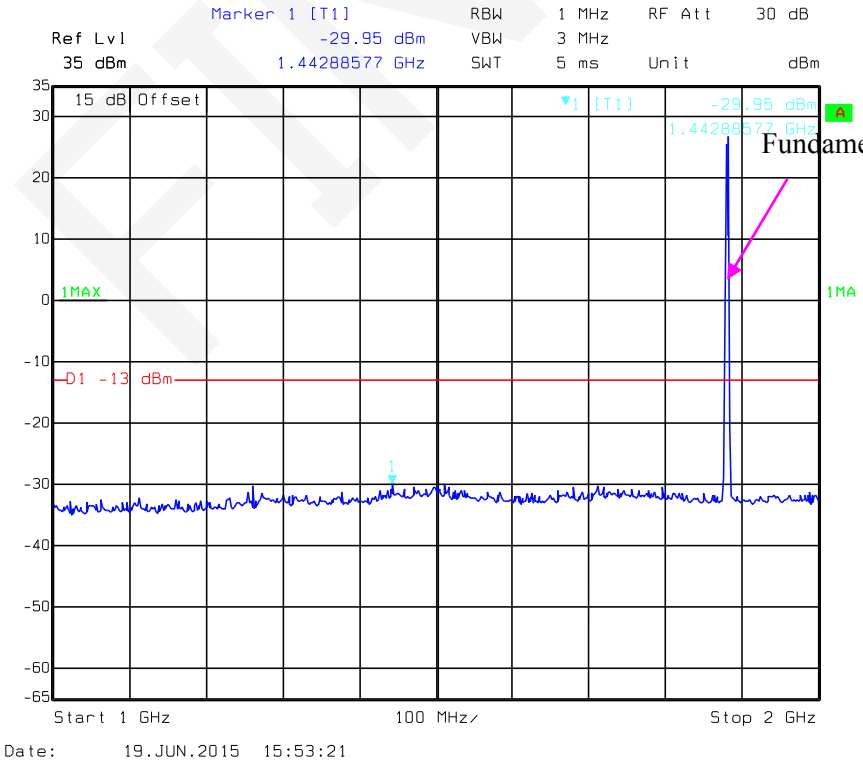

Date: 12.JUN.2015 20:44:02

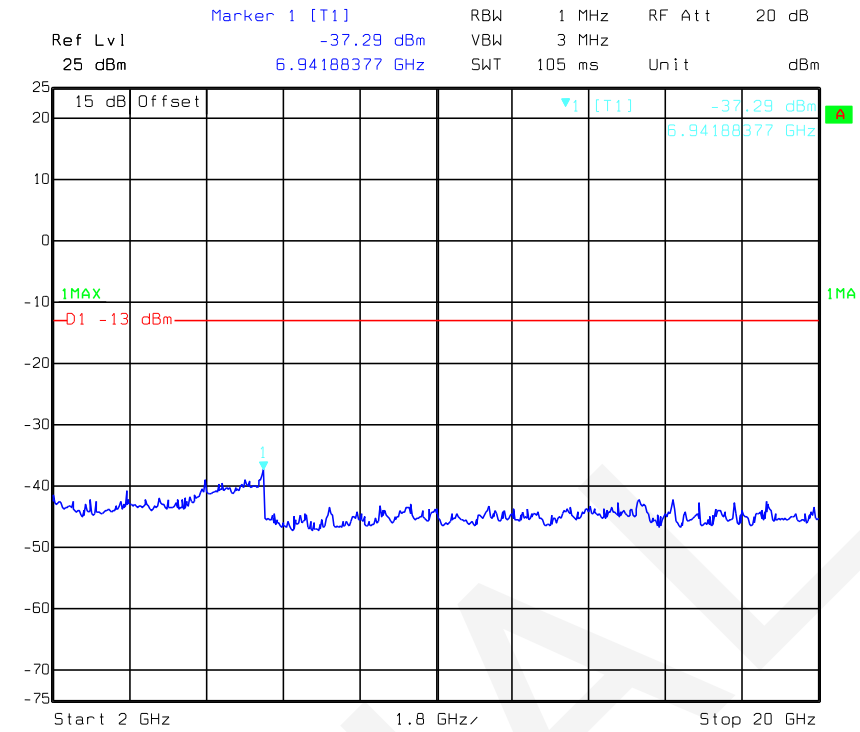
PART 27

**LTE Band 2 (Middle Channel)**

**QPSK-1.4 MHz**

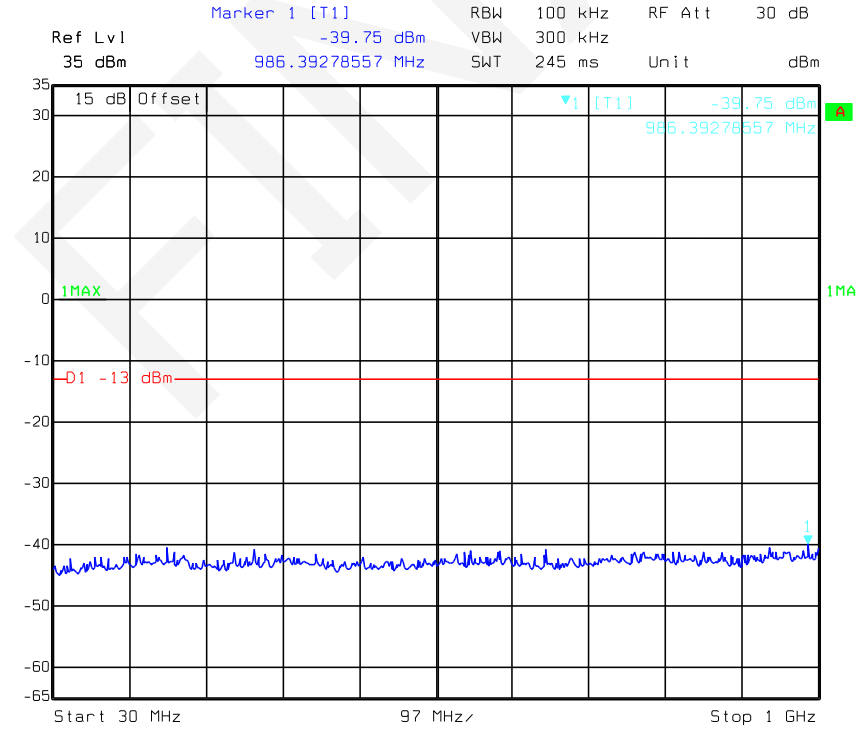


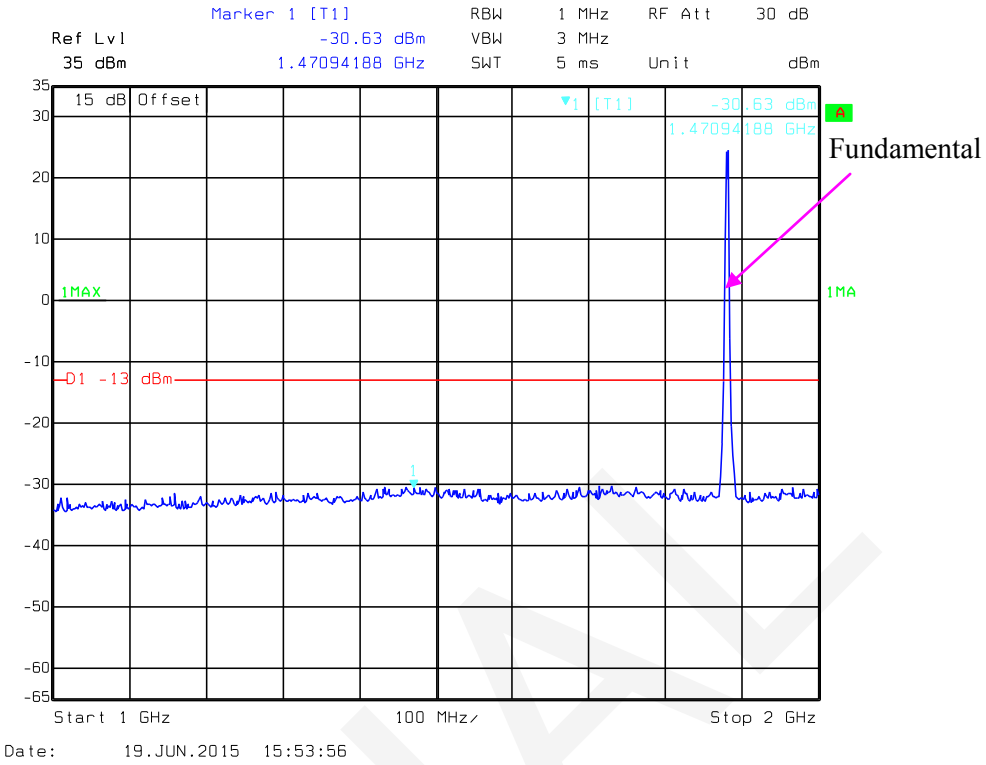


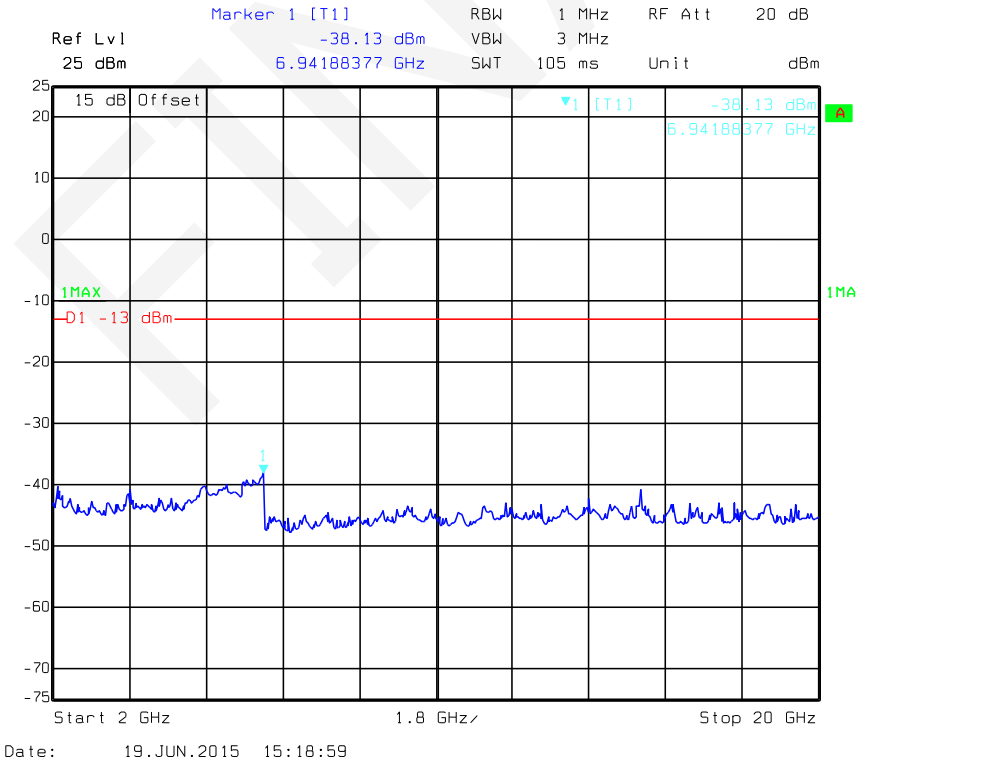

Date: 19.JUN.2015 15:18:11

**QPSK_3MHz**

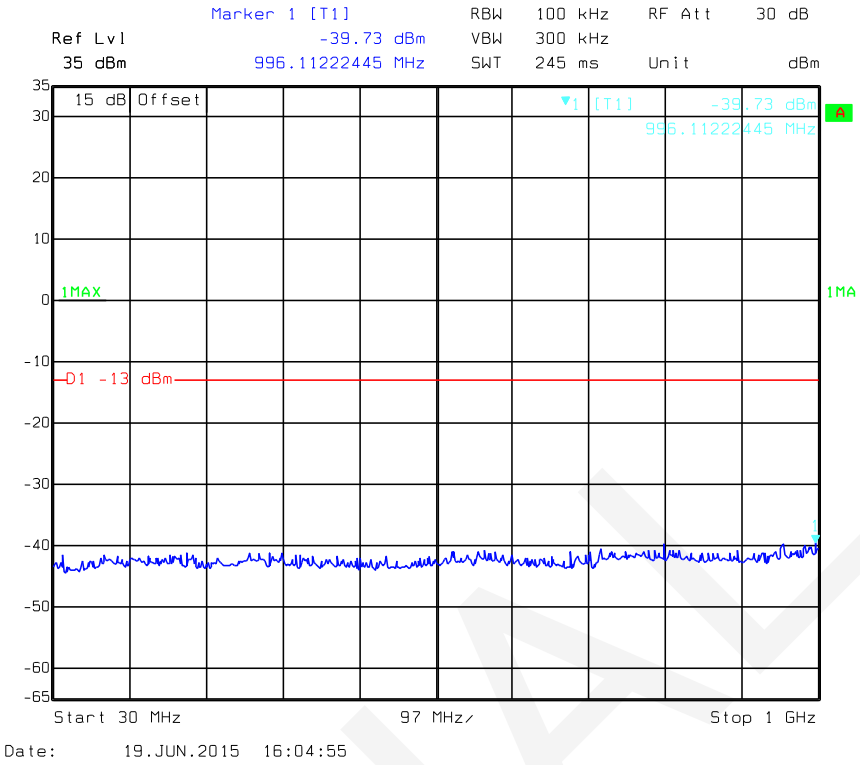


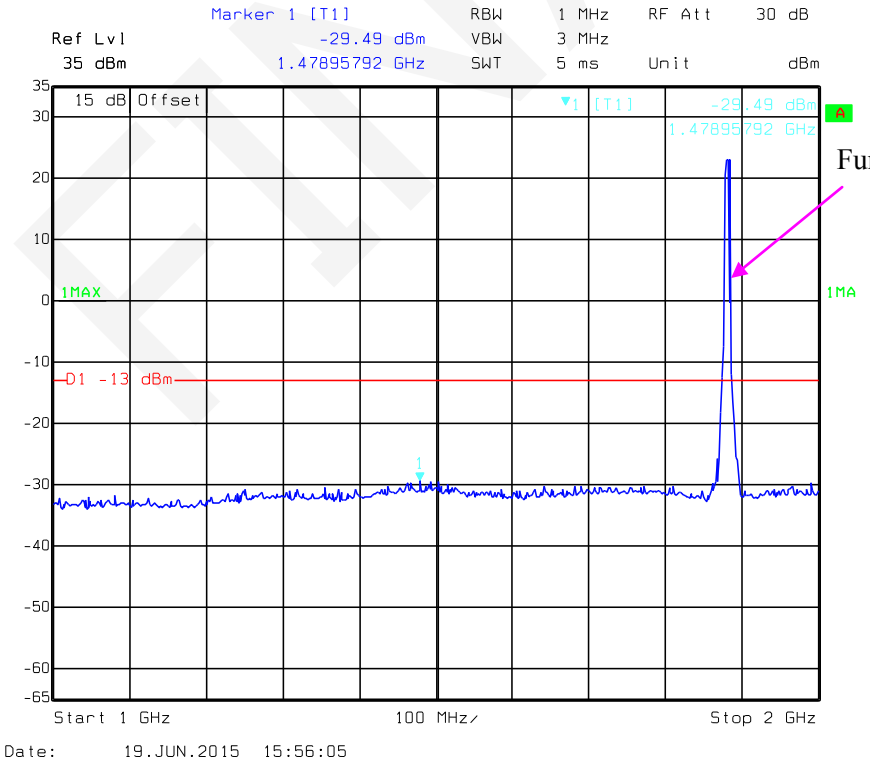

Date: 19.JUN.2015 16:05:33

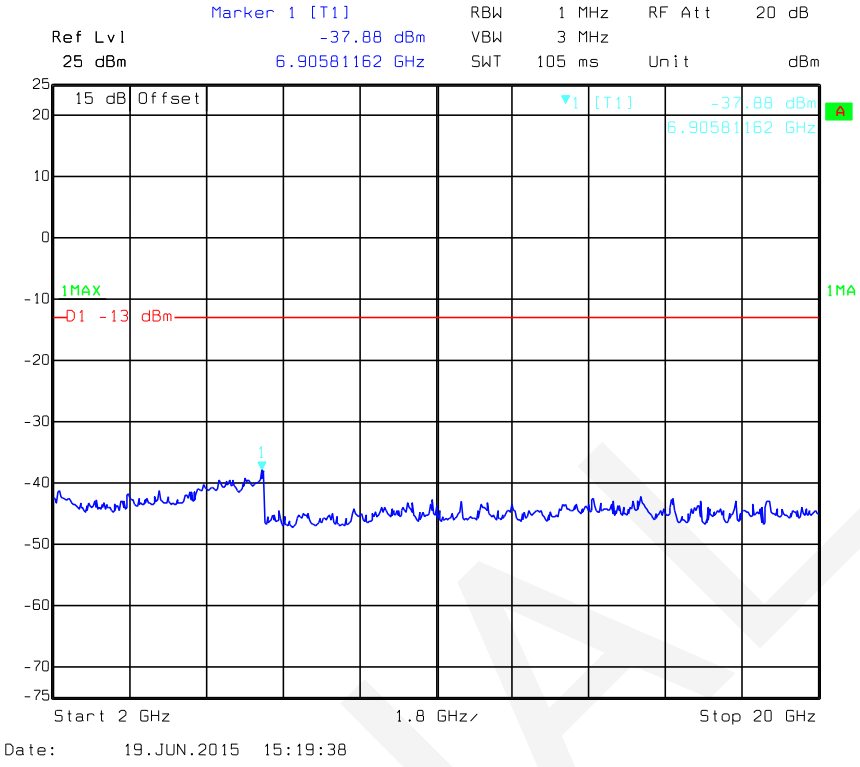

Marker 1 [T1]
-30.63 dBm
1.47094188 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 15:53:56


Marker 1 [T1]
-38.13 dBm
6.94188377 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:18:59

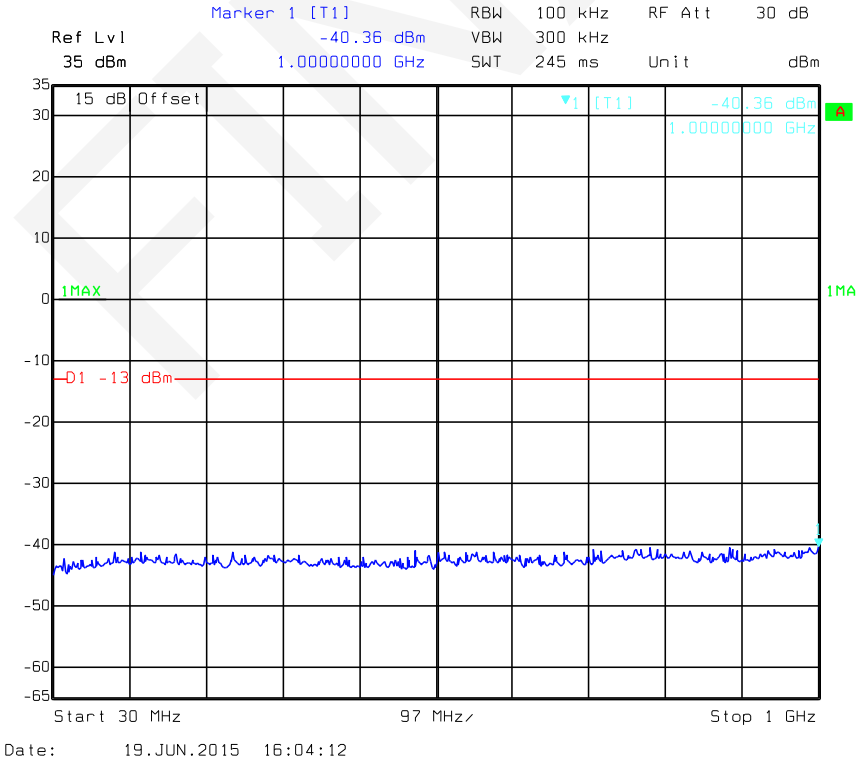
## QPSK_5MHz

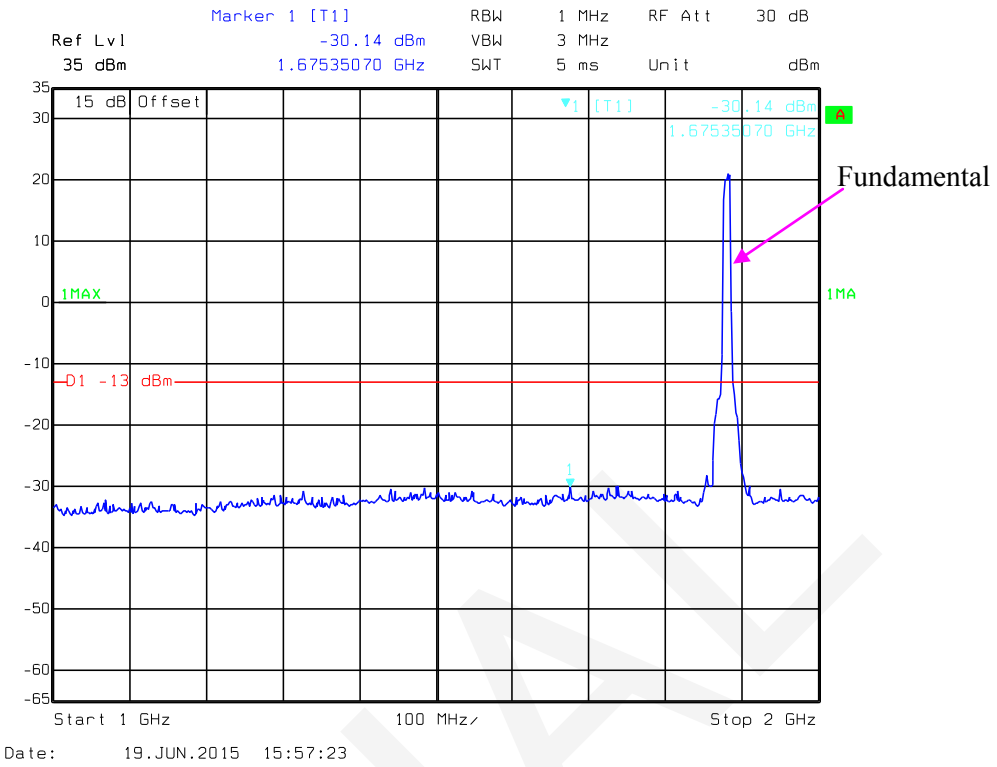

Marker 1 [T1]
Ref Lvl
35 dBm
-39.73 dBm
996.11222445 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:04:55

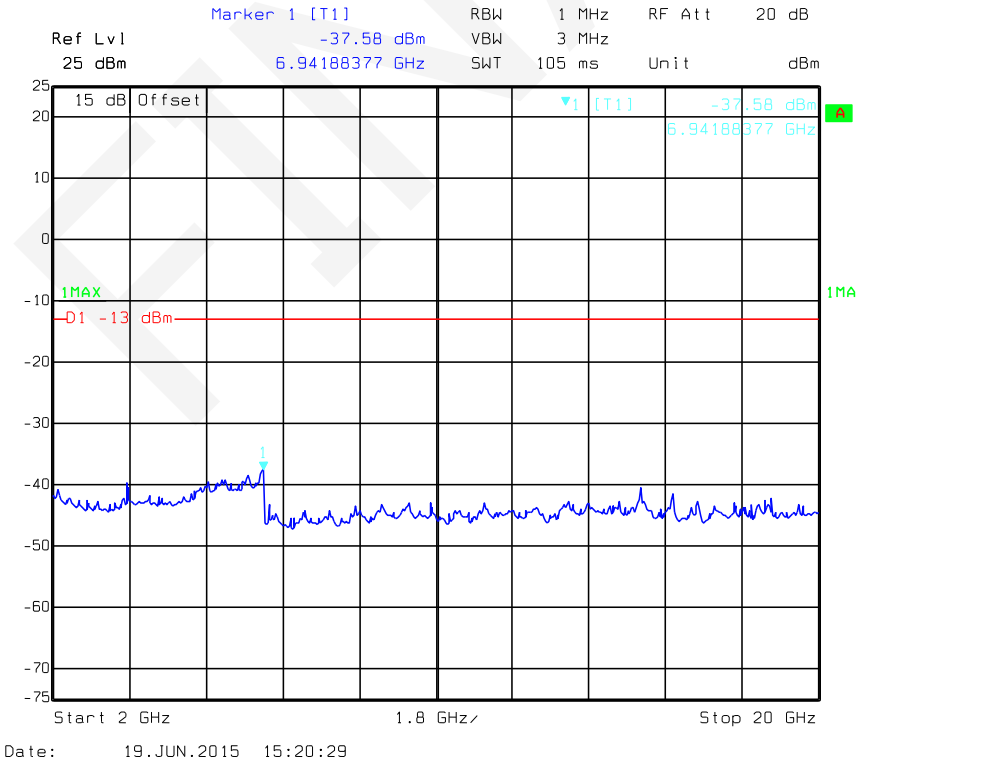

Marker 1 [T1]
Ref Lvl
35 dBm
-29.49 dBm
1.47895792 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 15:56:05


Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-37.88 dBm
VBW 3 MHz
25 dBm
6.90581162 GHz
SWT 105 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:19:38

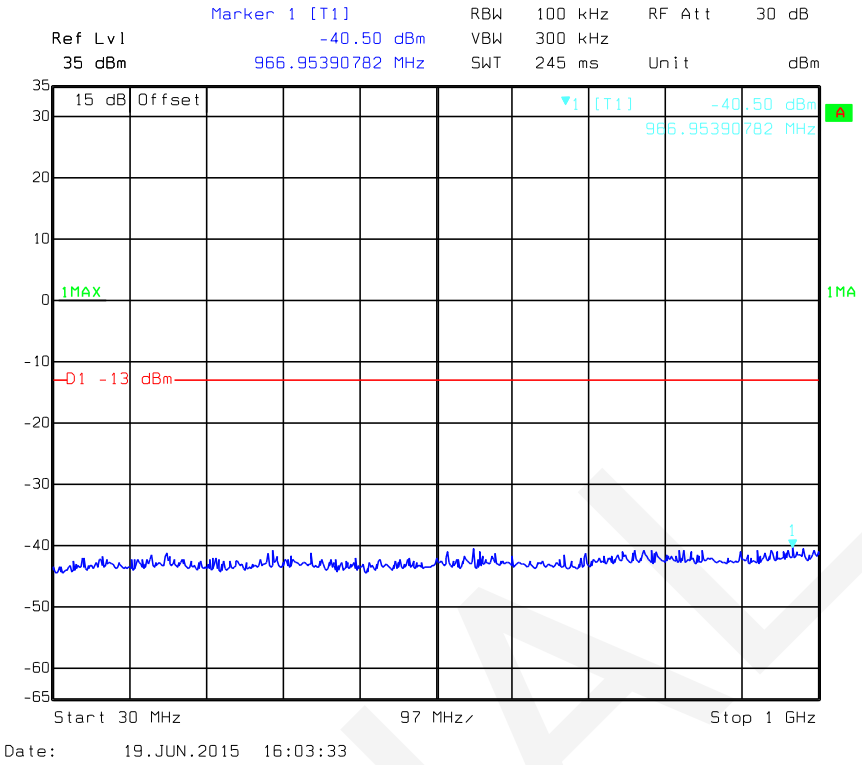
**QPSK_10MHz**

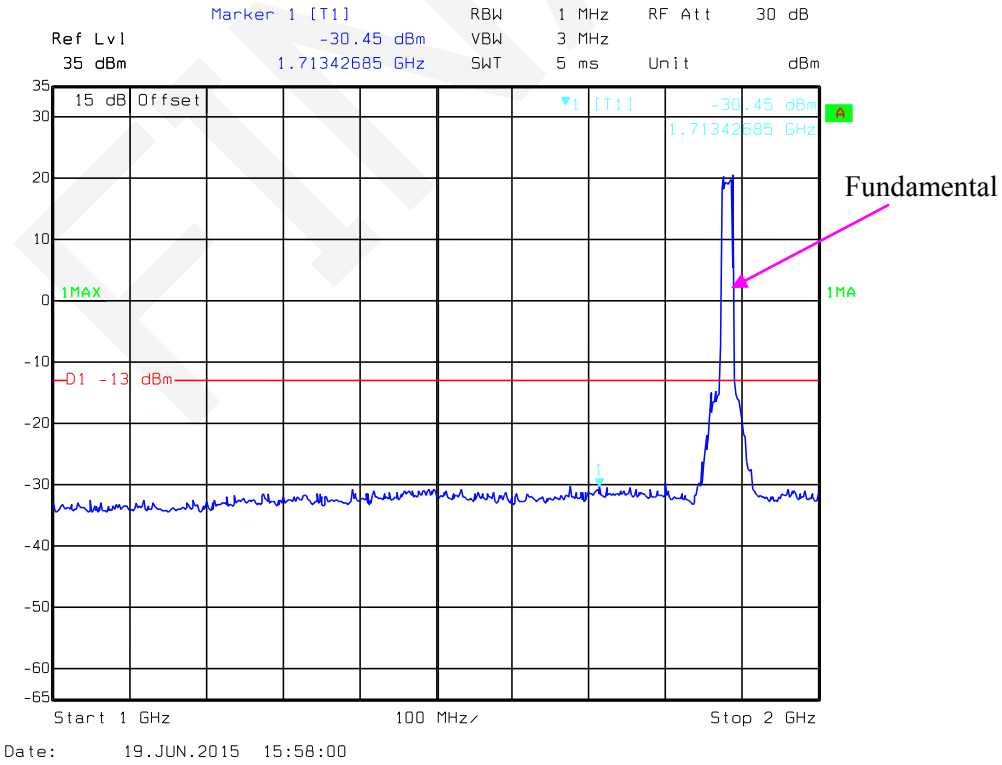

Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-40.36 dBm
VBW 300 kHz
35 dBm
1.00000000 GHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:04:12

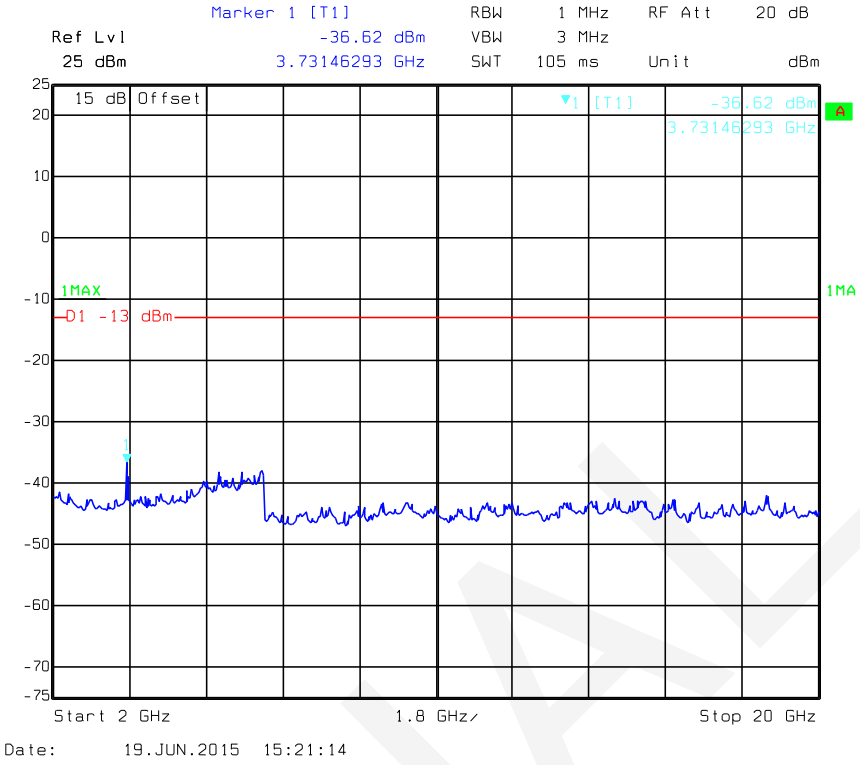

Marker 1 [T1]
-30.14 dBm
1.67535070 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 15:57:23


Marker 1 [T1]
-37.58 dBm
6.94188377 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:20:29

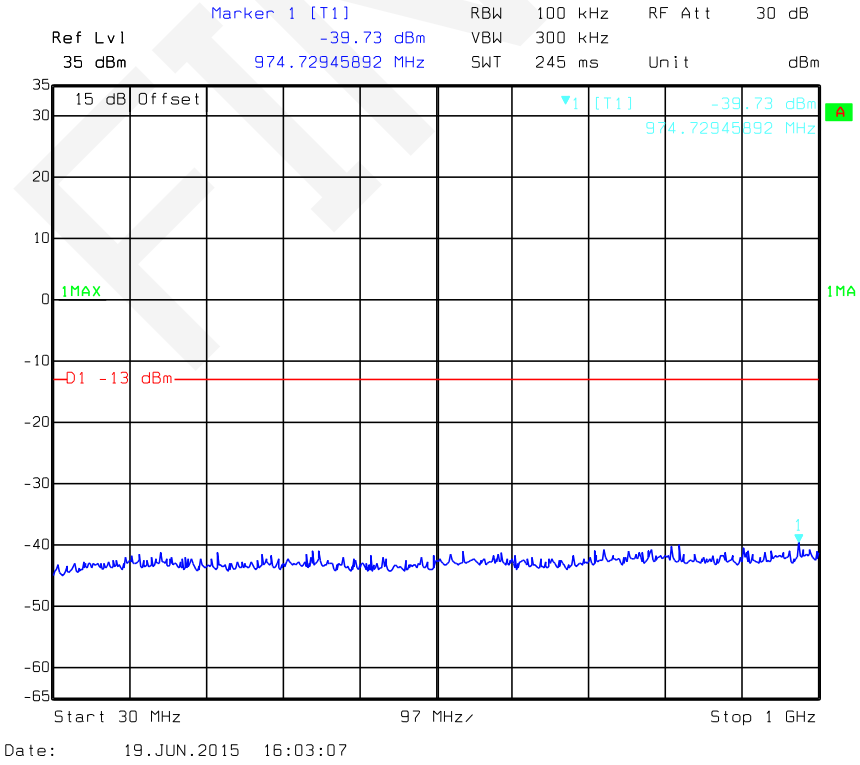
**QPSK_15MHz**

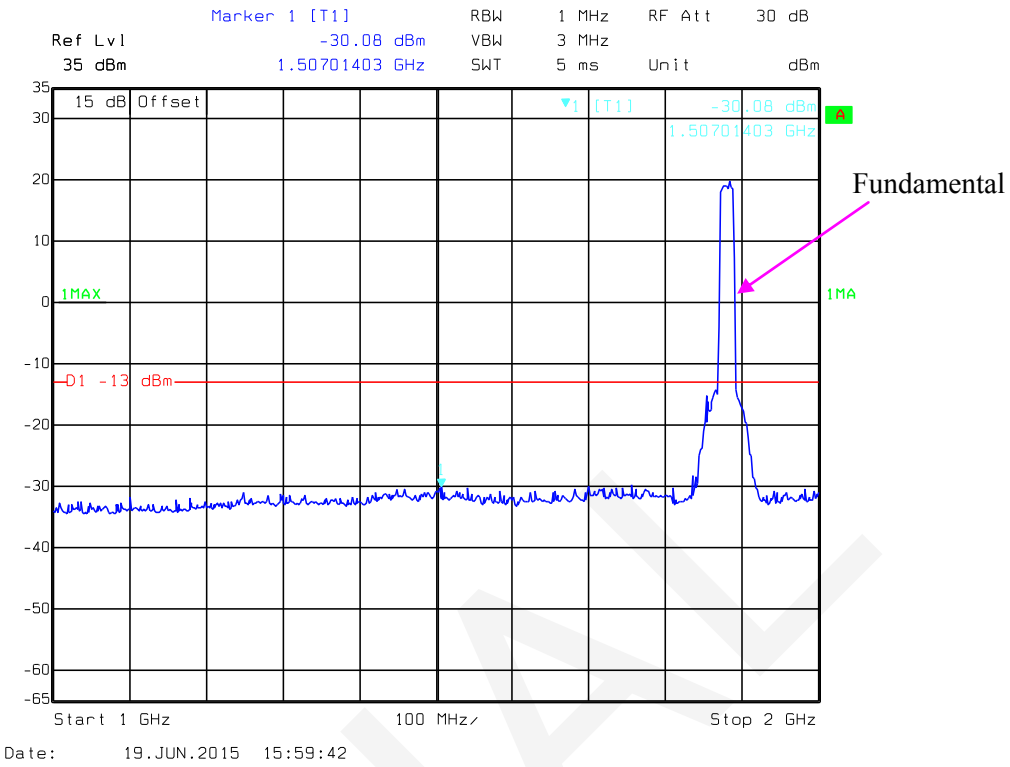

Marker 1 [T1]
-40.50 dBm
966.95390782 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:03:33

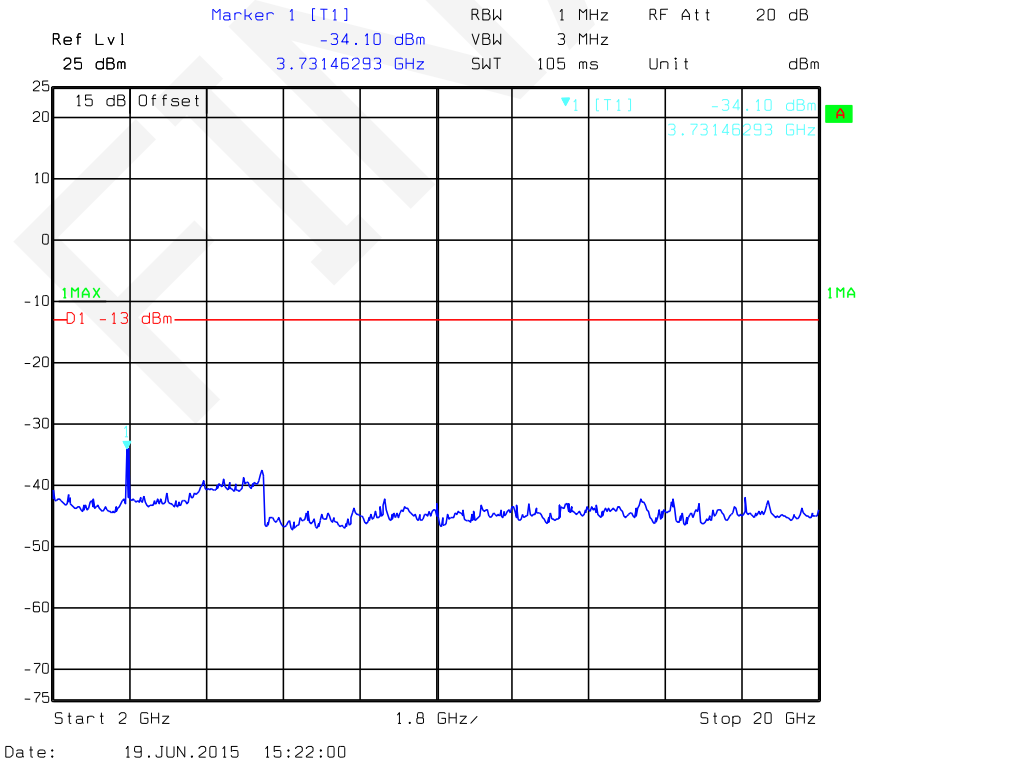

Marker 1 [T1]
-30.45 dBm
1.71342685 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 15:58:00


Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-36.62 dBm
VBW 3 MHz
25 dBm
3.73146293 GHz
SWT 105 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:21:14

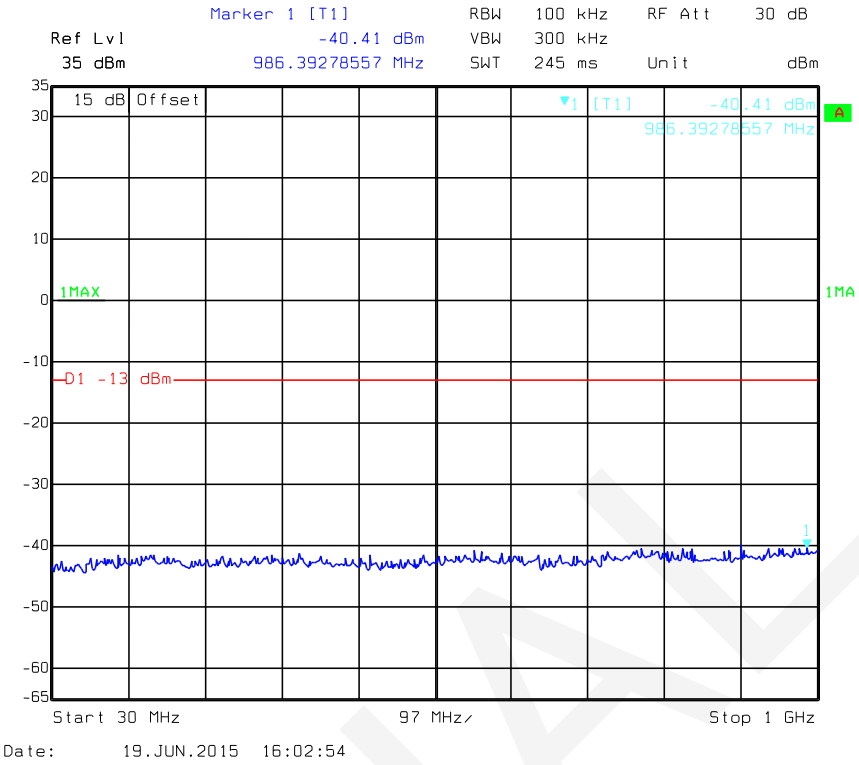
**QPSK_20MHz**

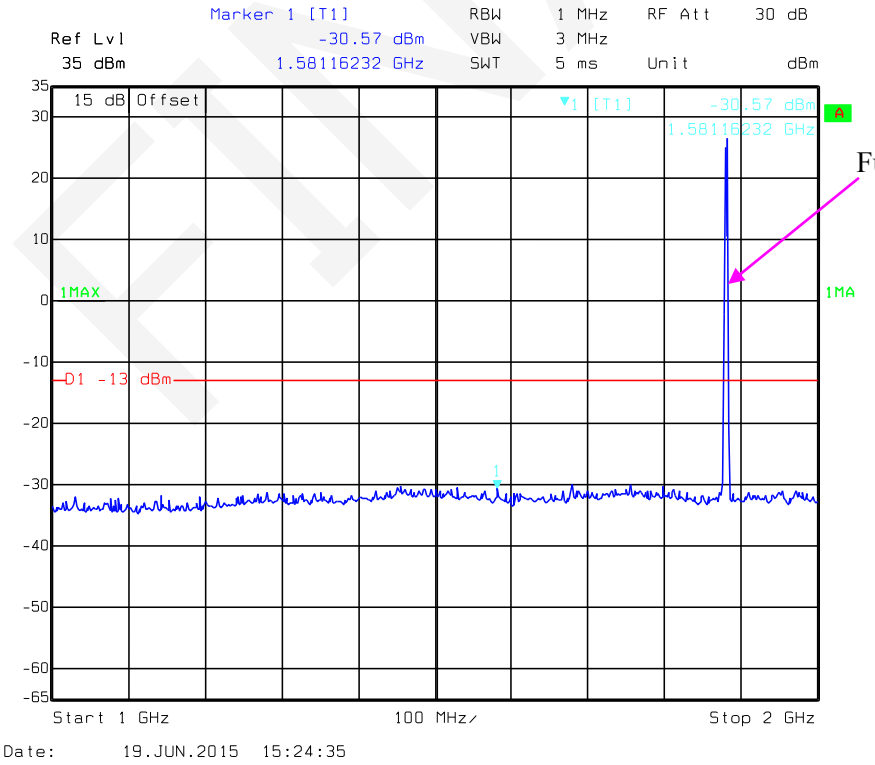

Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-39.73 dBm
VBW 300 kHz
35 dBm
974.72945892 MHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:03:07

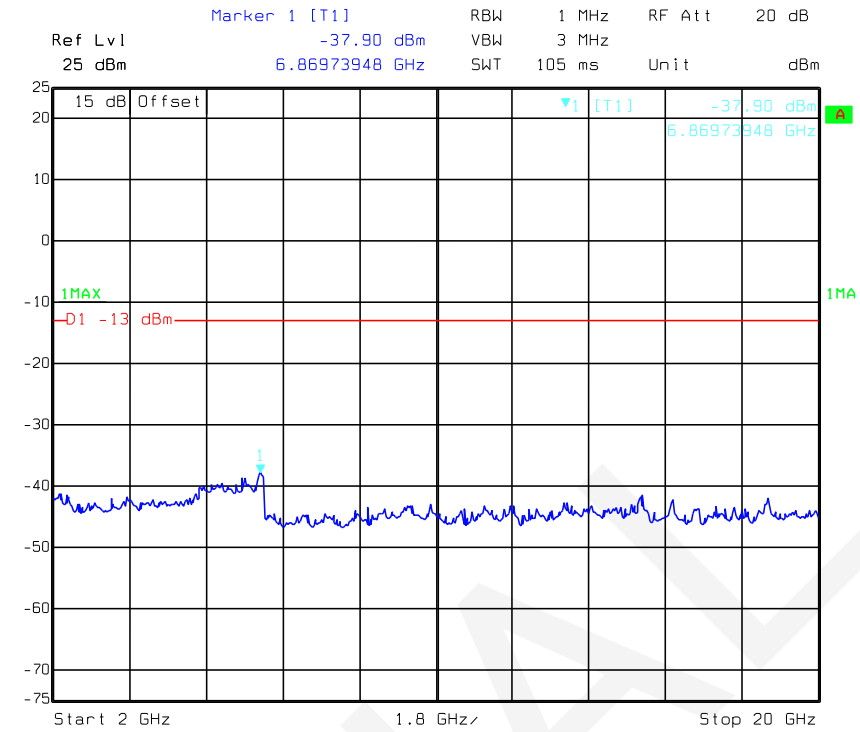

Marker 1 [T1]
-30.08 dBm
1.50701403 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 15:59:42


Marker 1 [T1]
-34.10 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:22:00

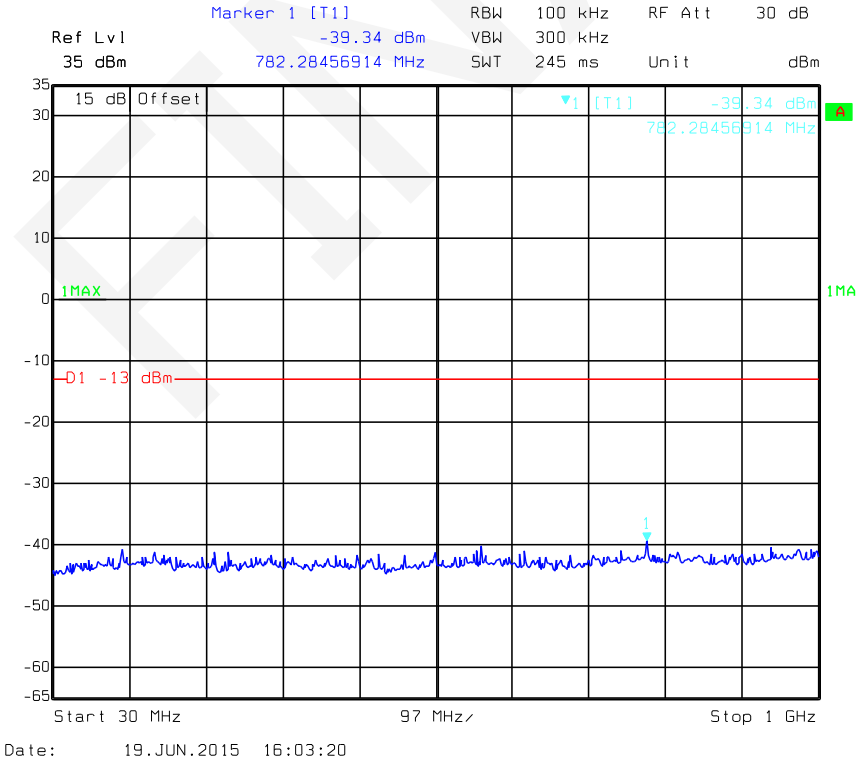
## 16QAM_1.4 MHz

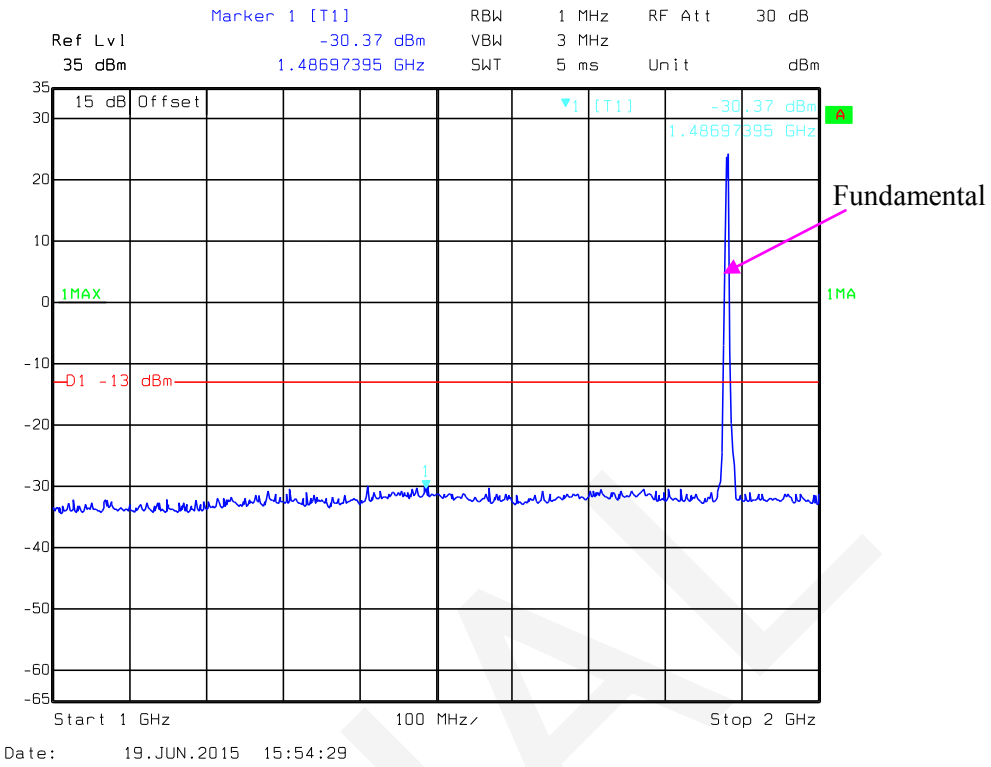

Marker 1 [T1]
-40.41 dBm
986.39278557 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:02:54

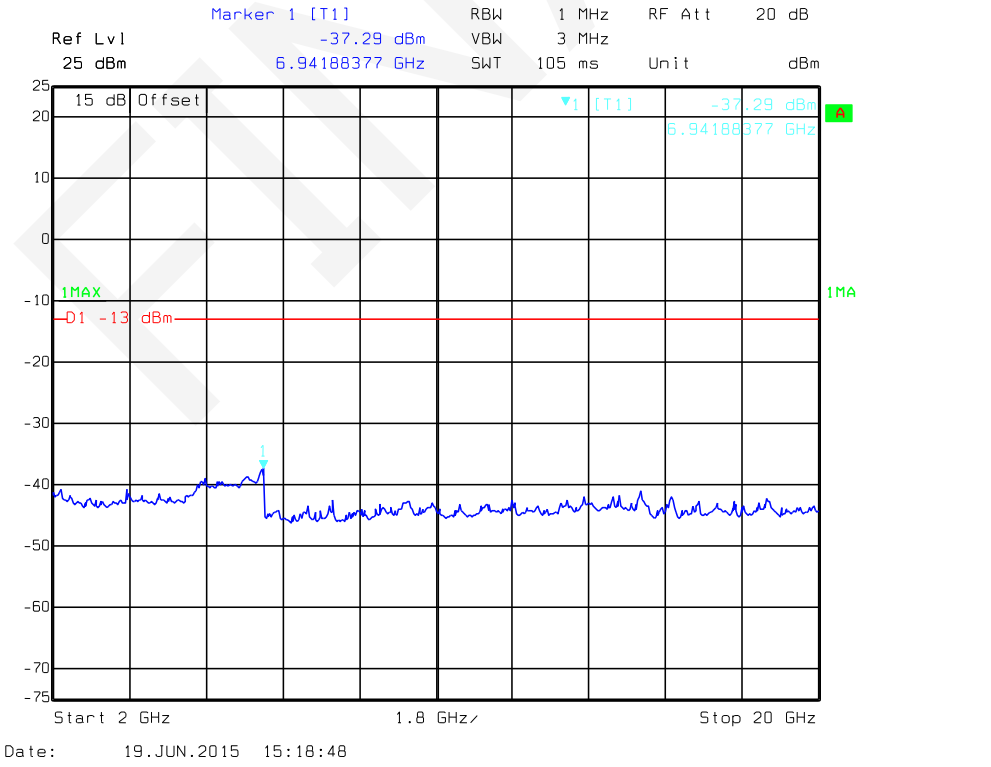

Marker 1 [T1]
-30.57 dBm
1.58116232 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 15:24:35


Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-37.90 dBm
VBW 3 MHz
25 dBm
6.86973948 GHz
SWT 105 ms
Unit dBm
15 dB Offset
[T1] -37.90 dBm
6.86973948 GHz
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:17:56

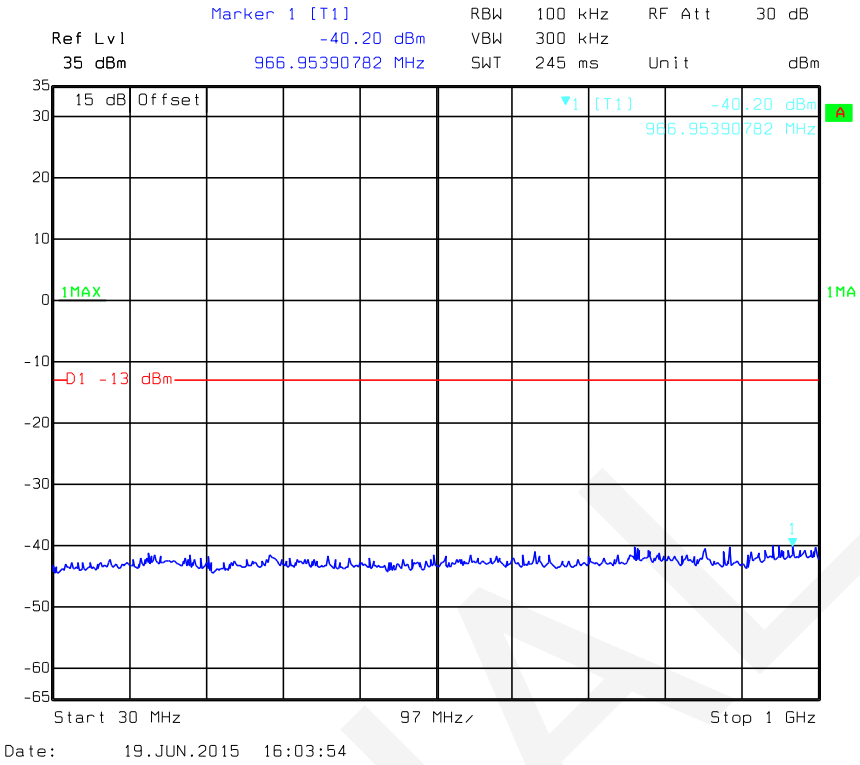
**16QAM_3 MHz**

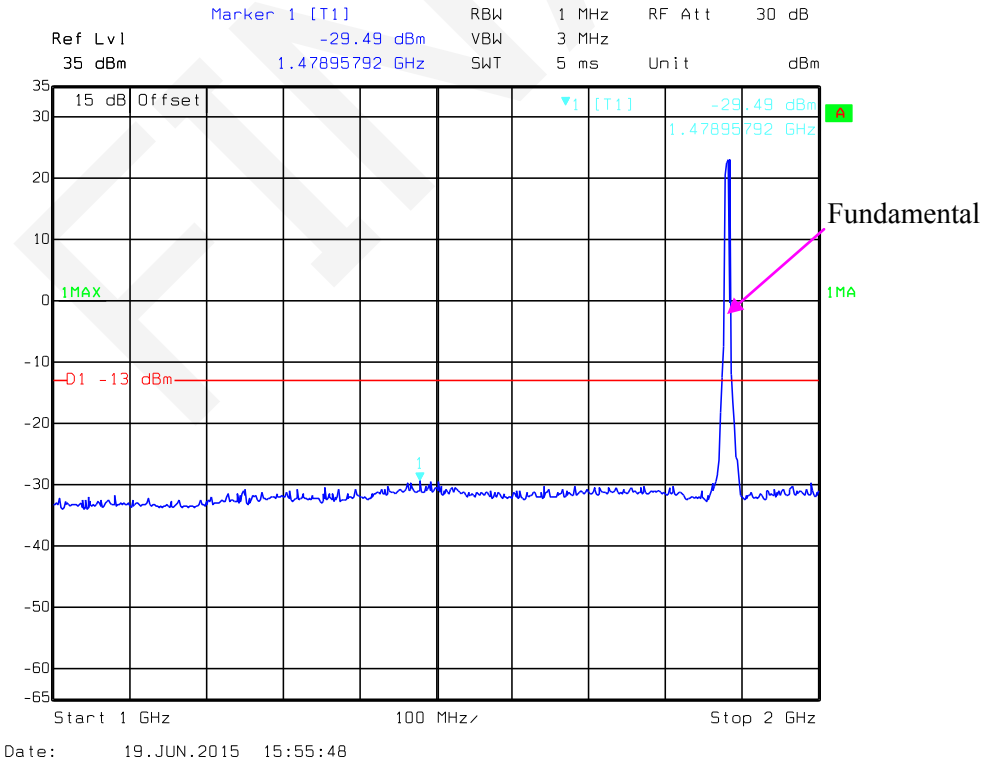

Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-39.34 dBm
VBW 300 kHz
35 dBm
782.28456914 MHz
SWT 245 ms
Unit dBm
15 dB Offset
[T1] -39.34 dBm
782.28456914 MHz
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:03:20

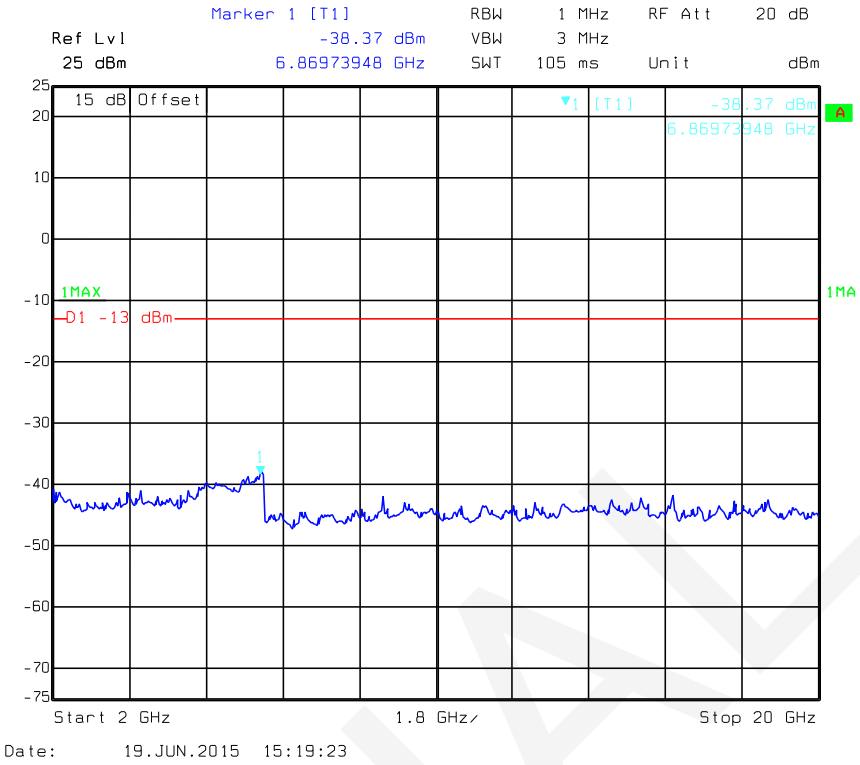

Marker 1 [T1]
-30.37 dBm
1.48697395 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 15:54:29


Marker 1 [T1]
-37.29 dBm
6.94188377 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:18:48

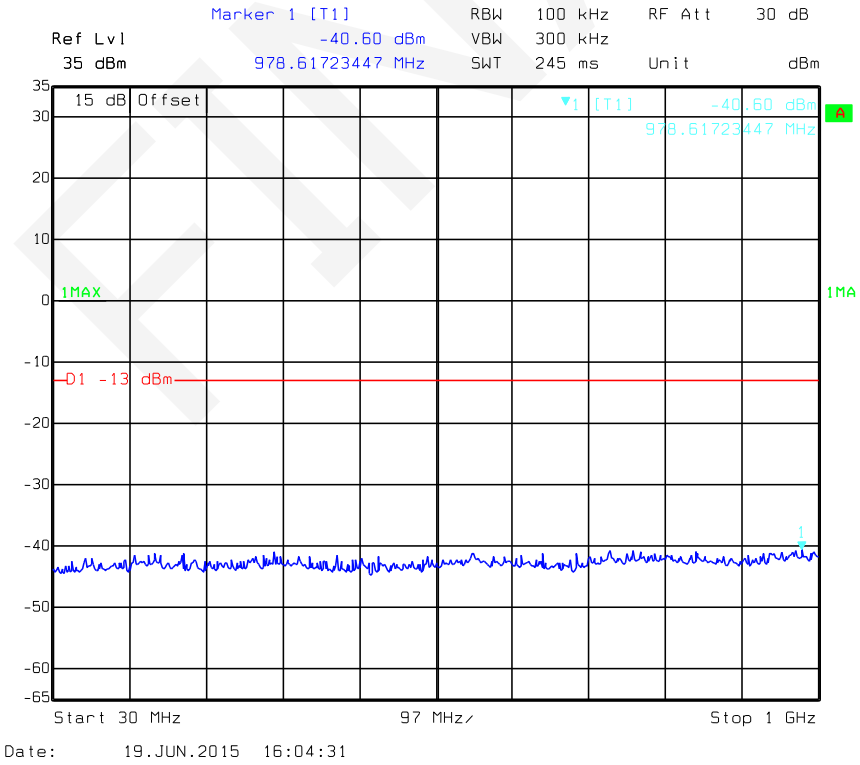
## 16QAM_5MHz

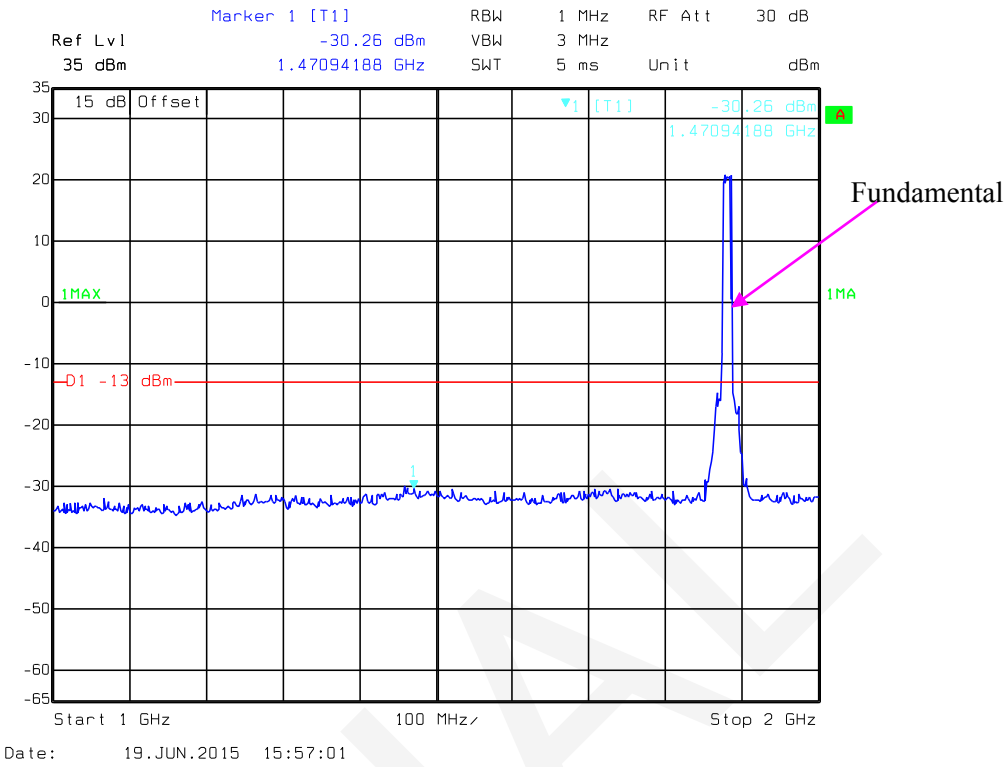

Marker 1 [T1]
Ref Lvl
35 dBm
-40.20 dBm
966.95390782 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:03:54

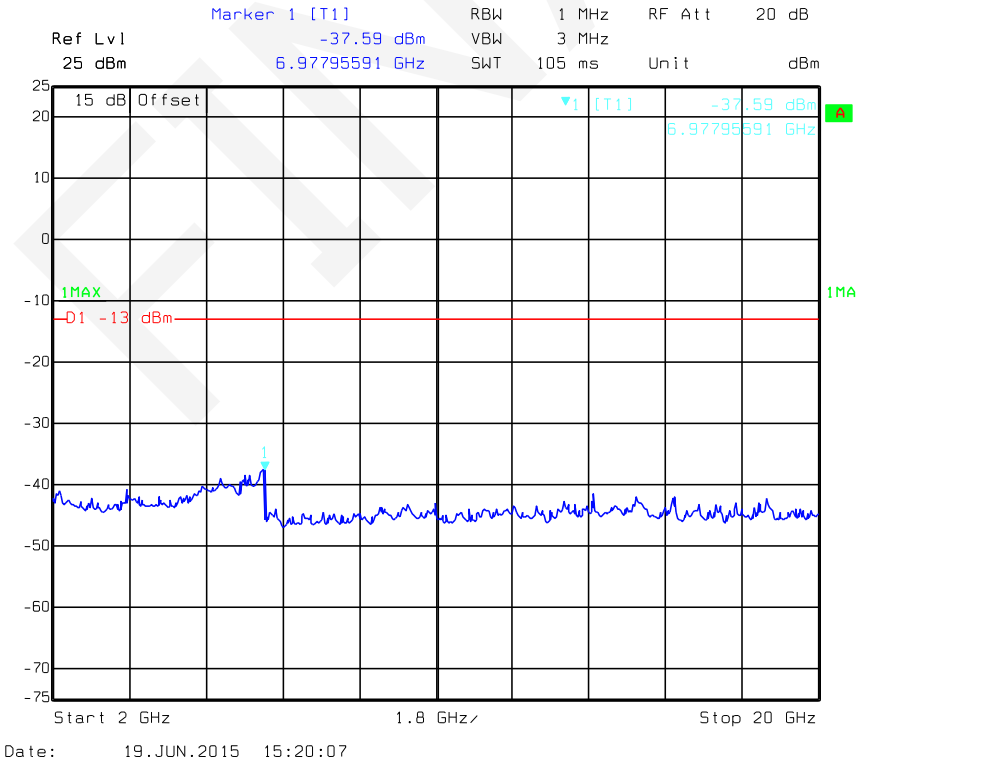

Marker 1 [T1]
Ref Lvl
35 dBm
-29.49 dBm
1.47895792 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 15:55:48


Marker 1 [T1]
-38.37 dBm
6.86973948 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:19:23

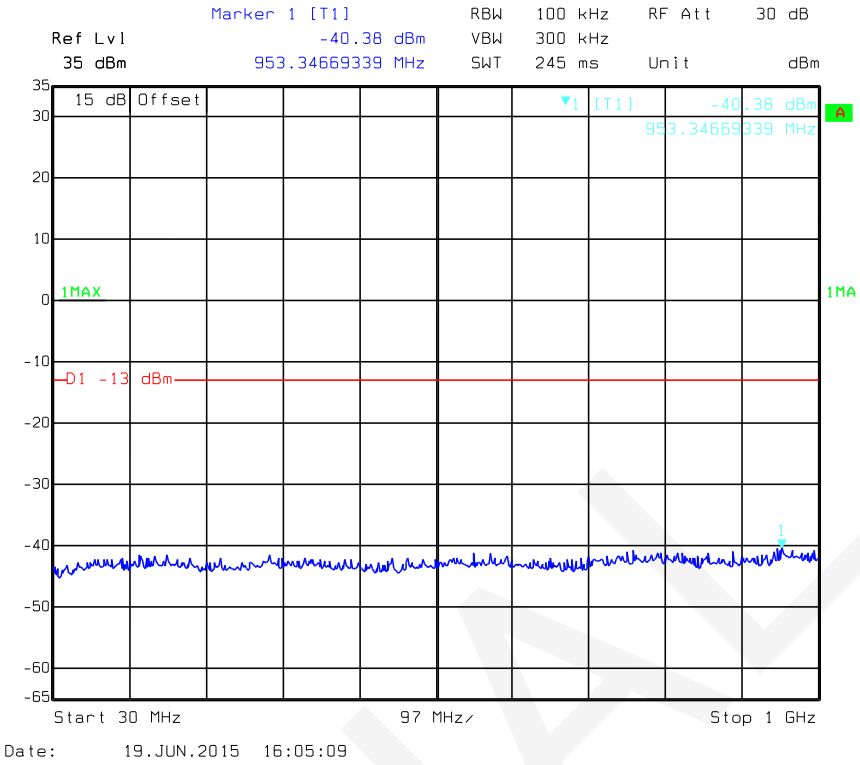
**16QAM_10MHz**

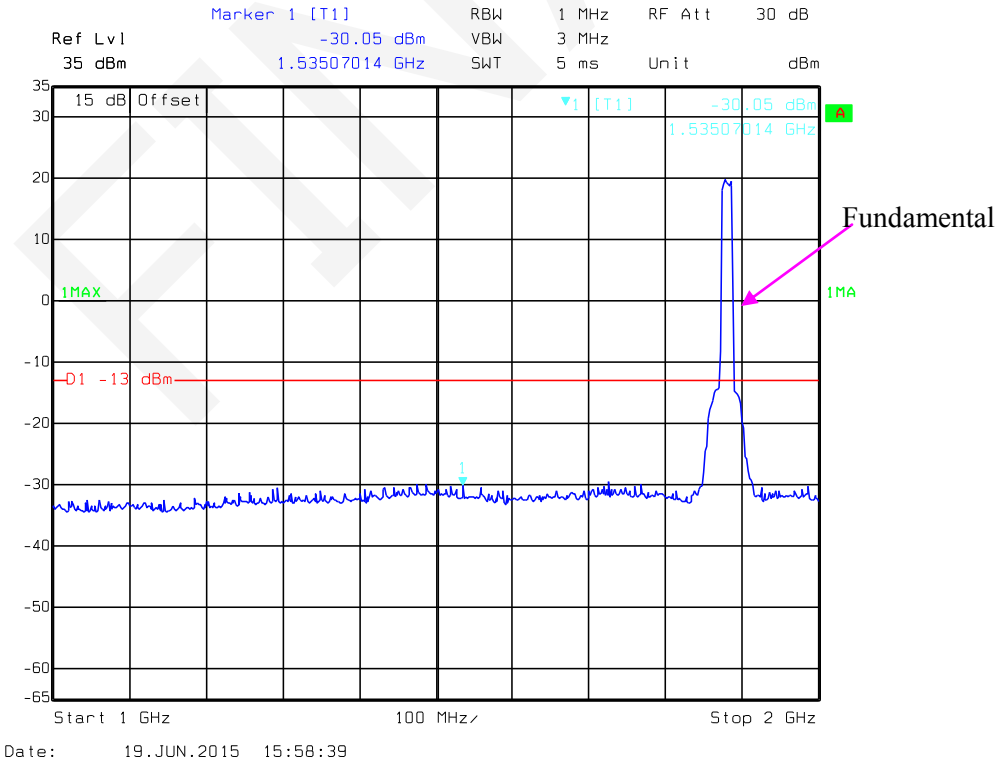

Marker 1 [T1]
-40.60 dBm
978.61723447 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:04:31

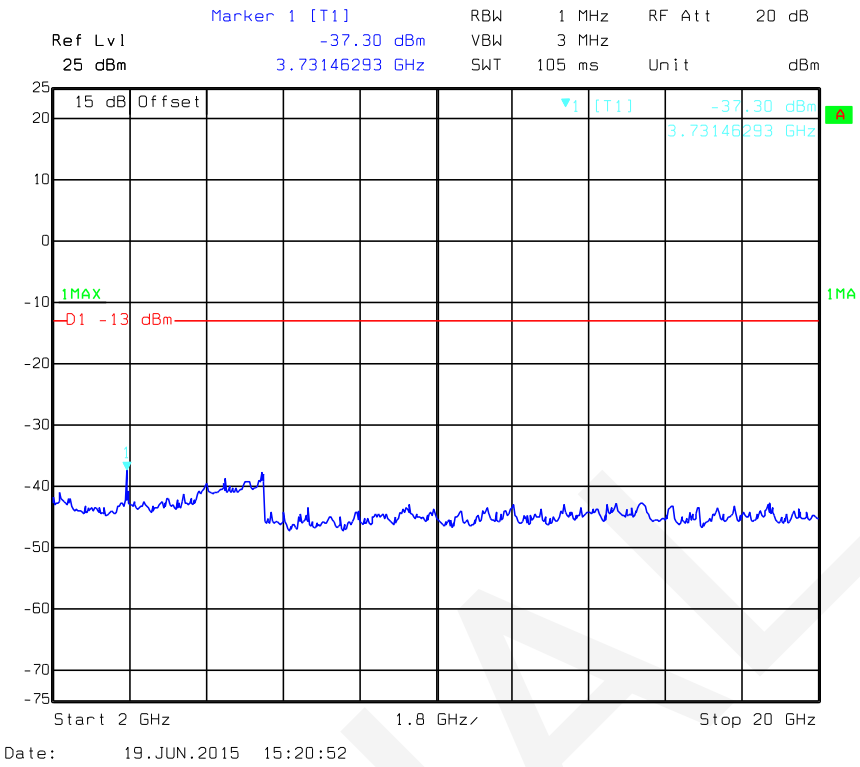

Marker 1 [T1]
-30.26 dBm
1.47094188 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 15:57:01


Marker 1 [T1]
-37.59 dBm
6.97795591 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:20:07

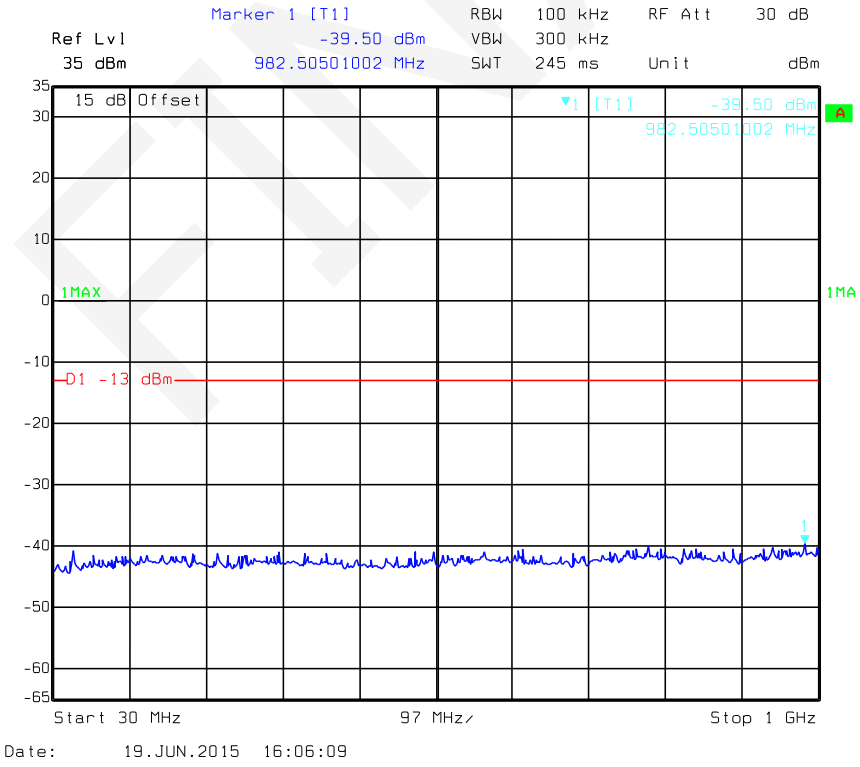
## 16QAM_15 MHz

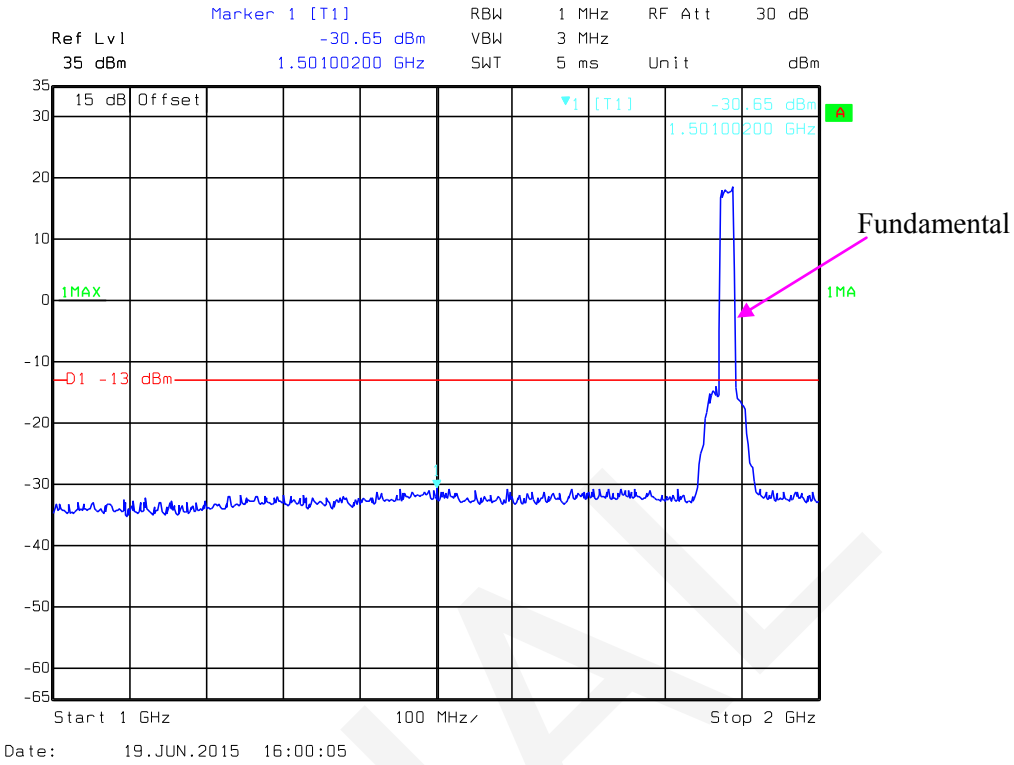

Marker 1 [T1]
-40.38 dBm
953.34669339 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:05:09

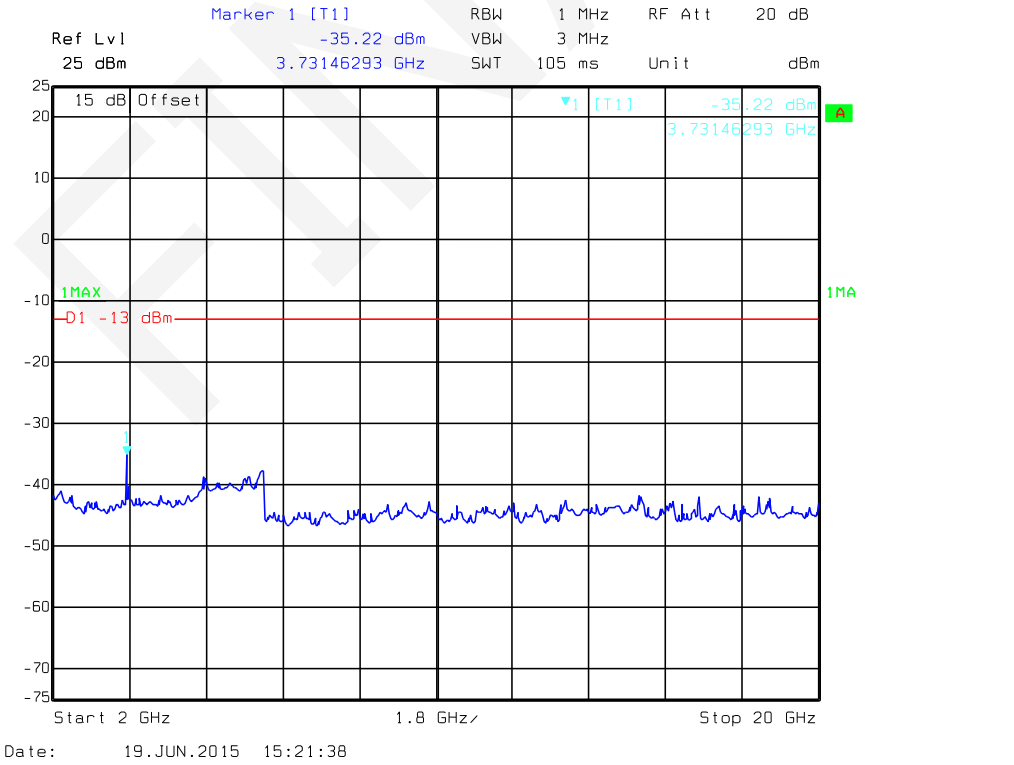

Marker 1 [T1]
-30.05 dBm
1.53507014 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 15:58:39


Marker 1 [T1]
-37.30 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:20:52

**16QAM_20 MHz**


Marker 1 [T1]
-39.50 dBm
982.50501002 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 16:06:09

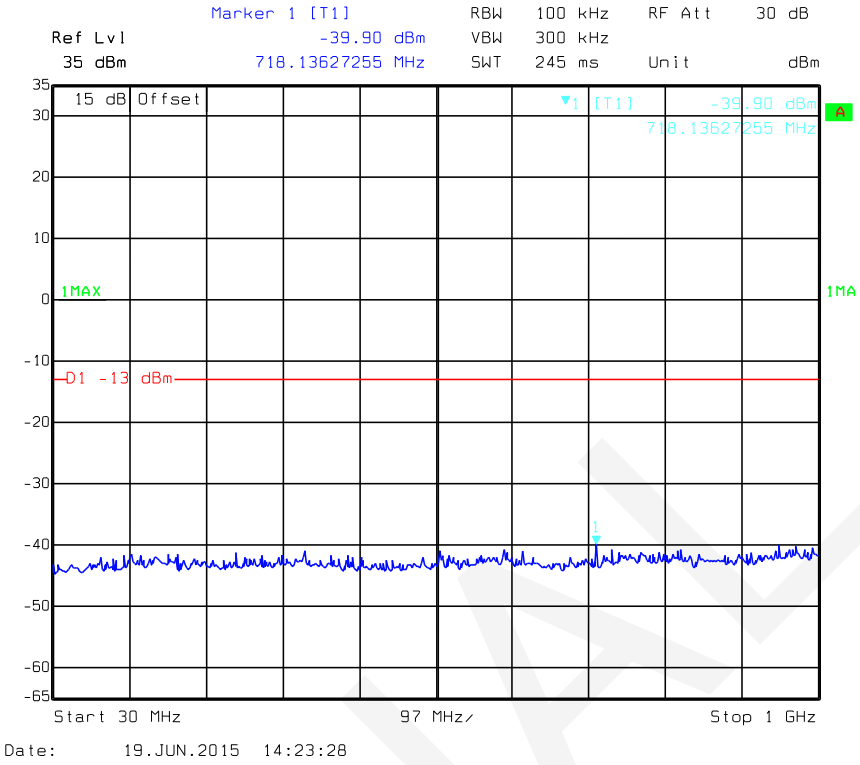

Marker 1 [T1]
Ref Lvl
35 dBm
-30.65 dBm
1.50100200 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 16:00:05

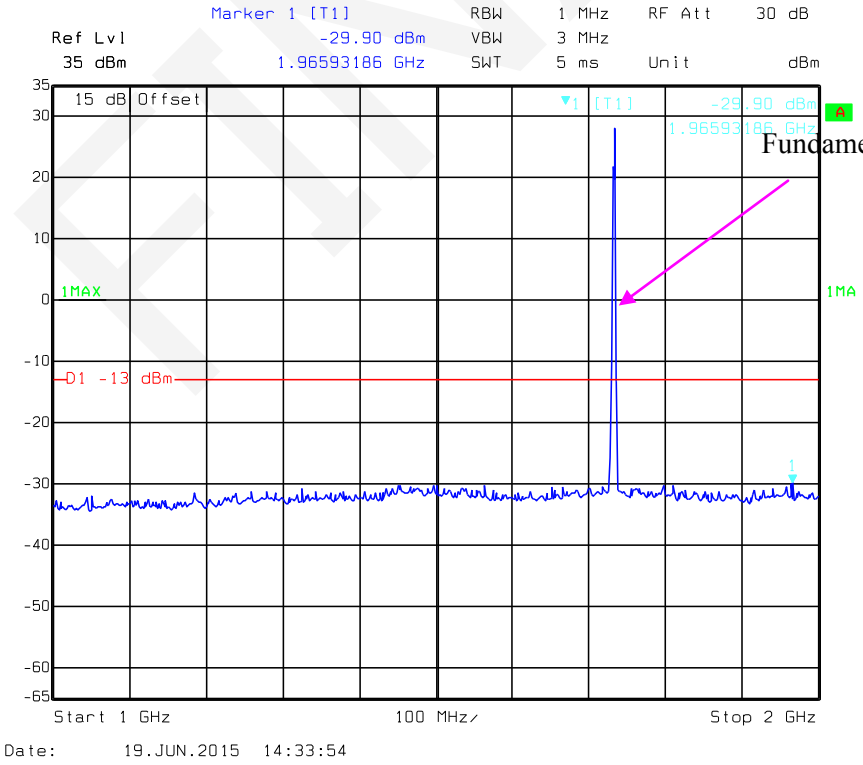

Marker 1 [T1]
Ref Lvl
25 dBm
-35.22 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 15:21:38

PART 27

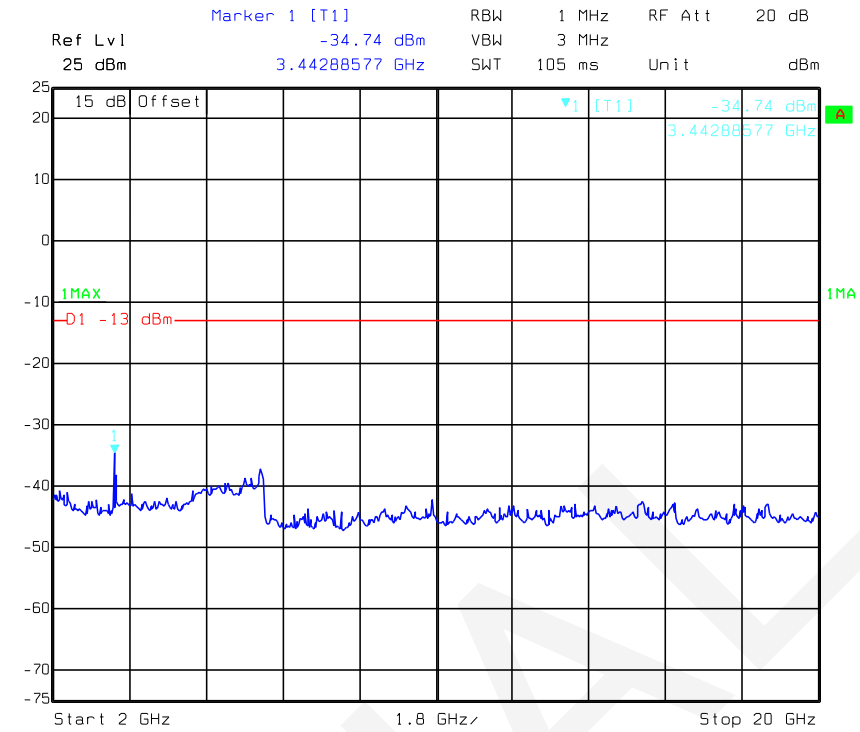
**LTE Band 4 (Middle Channel)**

**QPSK-1.4 MHz**

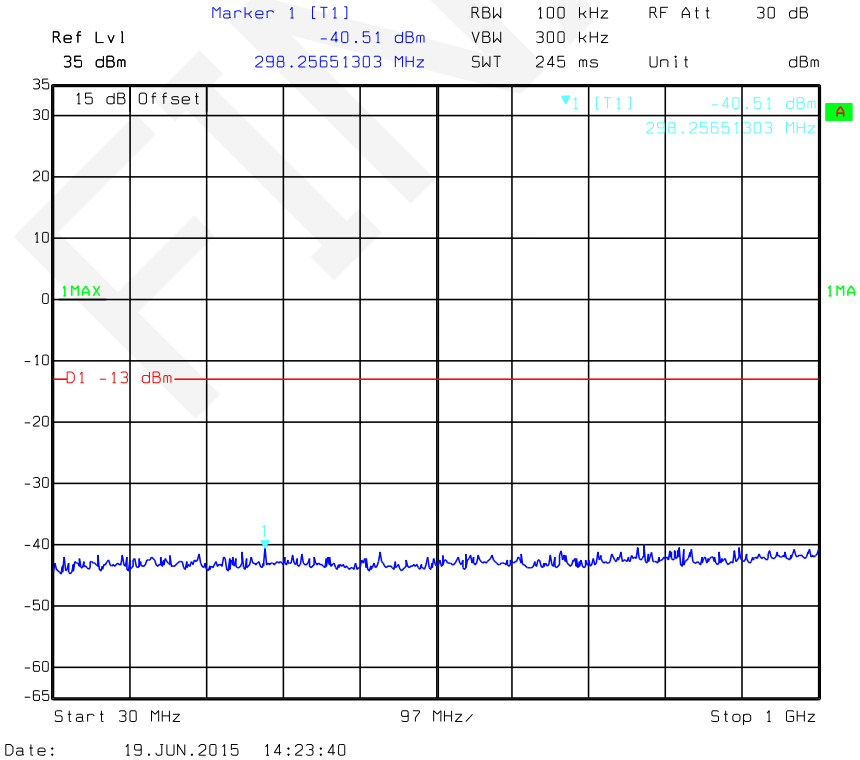


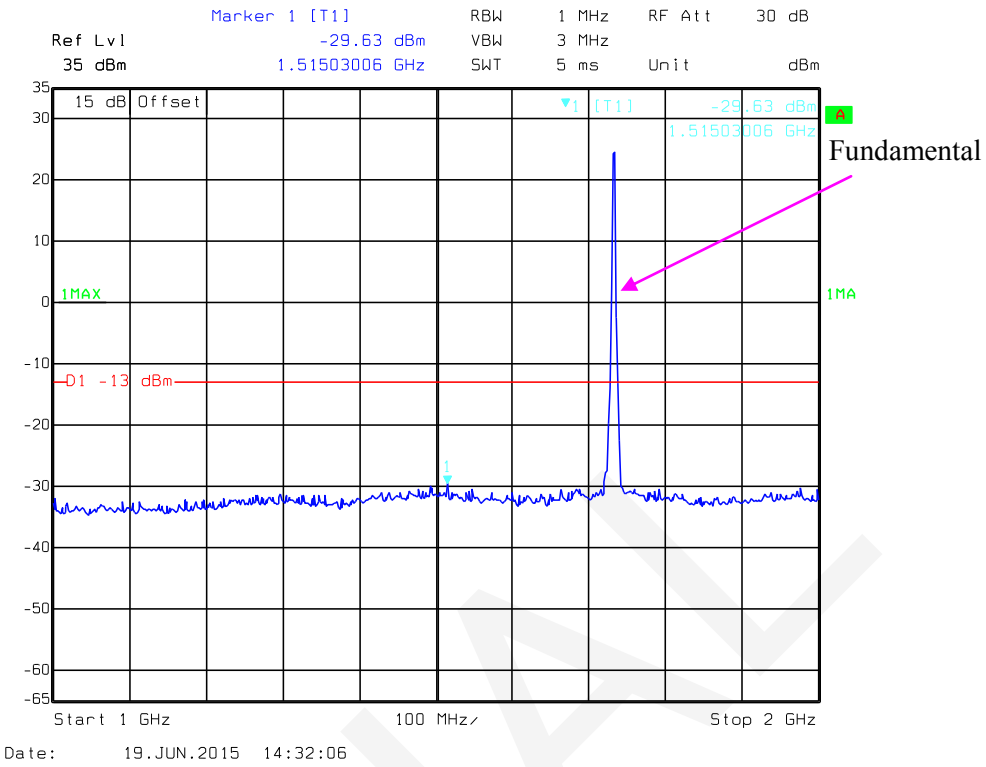



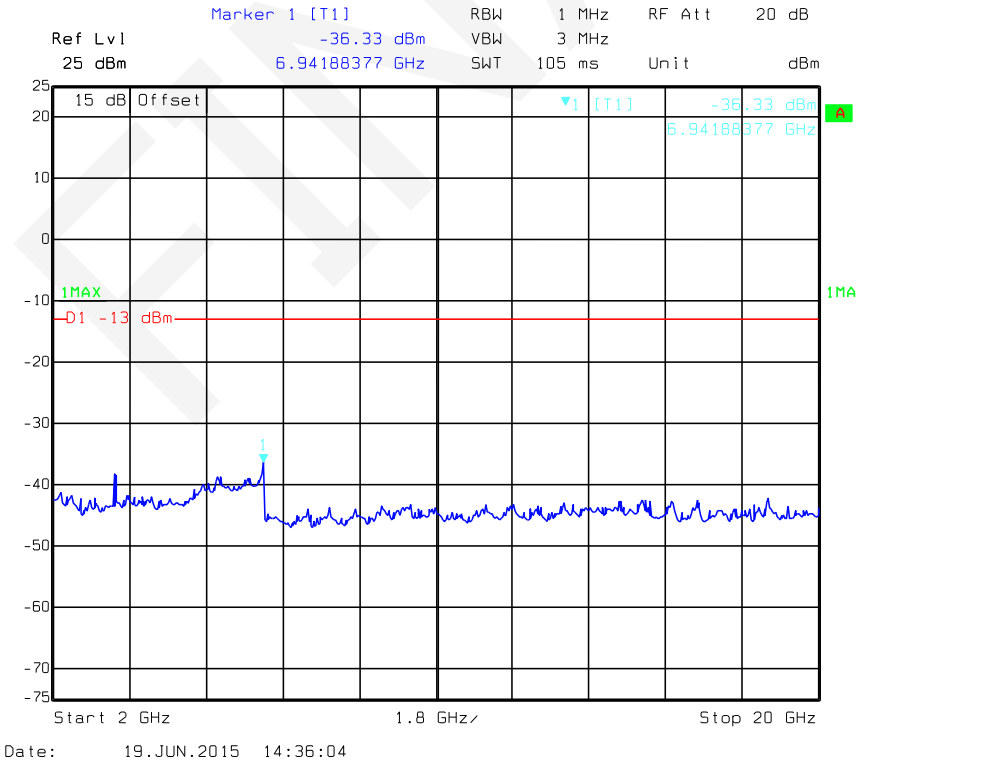

Fundamental


Marker 1 [T1]
-34.74 dBm
3.44288577 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:35:11

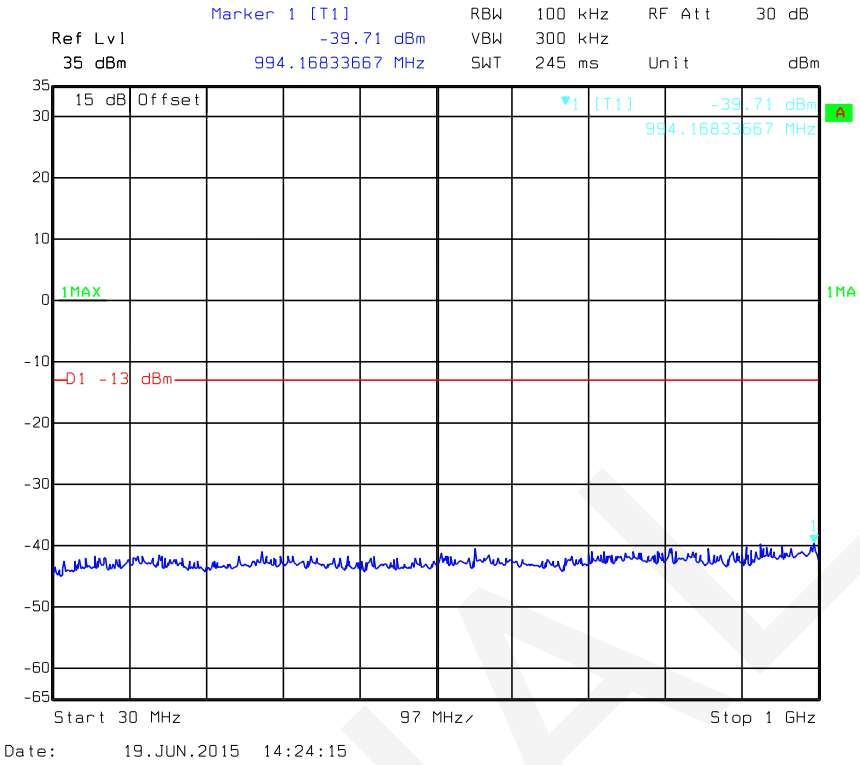
**QPSK_3MHz**

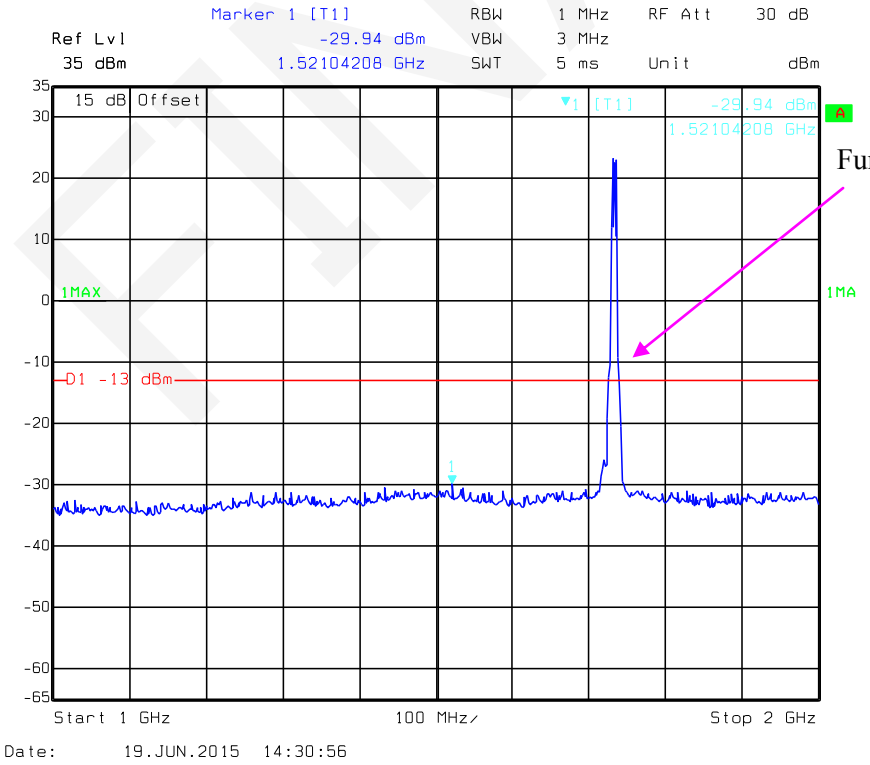

Marker 1 [T1]
-40.51 dBm
298.25651303 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:23:40

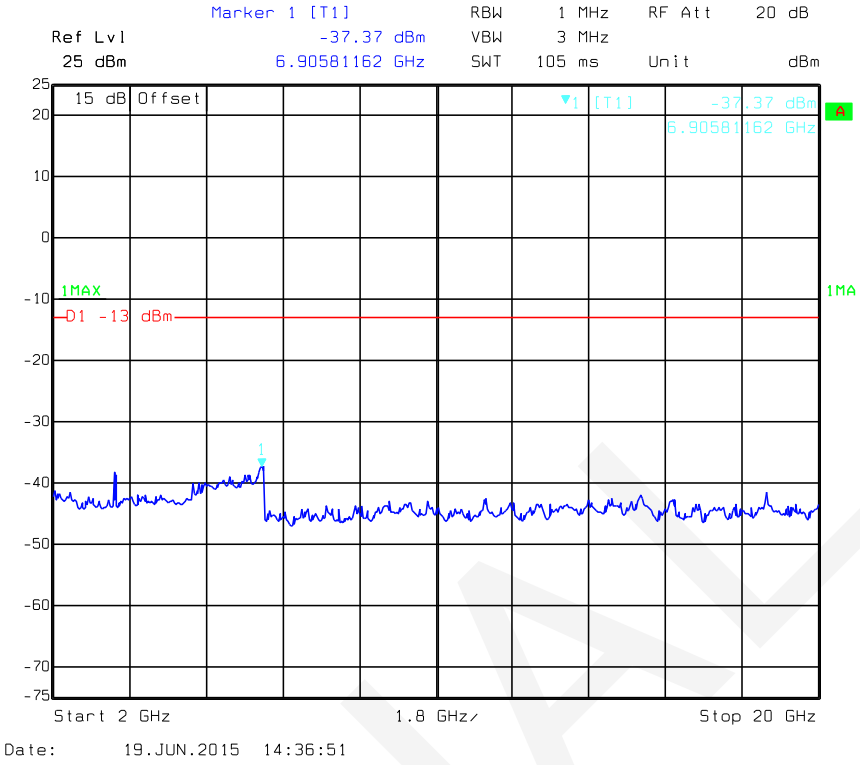

Marker 1 [T1]
-29.63 dBm
1.51503006 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 14:32:06


Marker 1 [T1]
-36.33 dBm
6.94188377 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:36:04

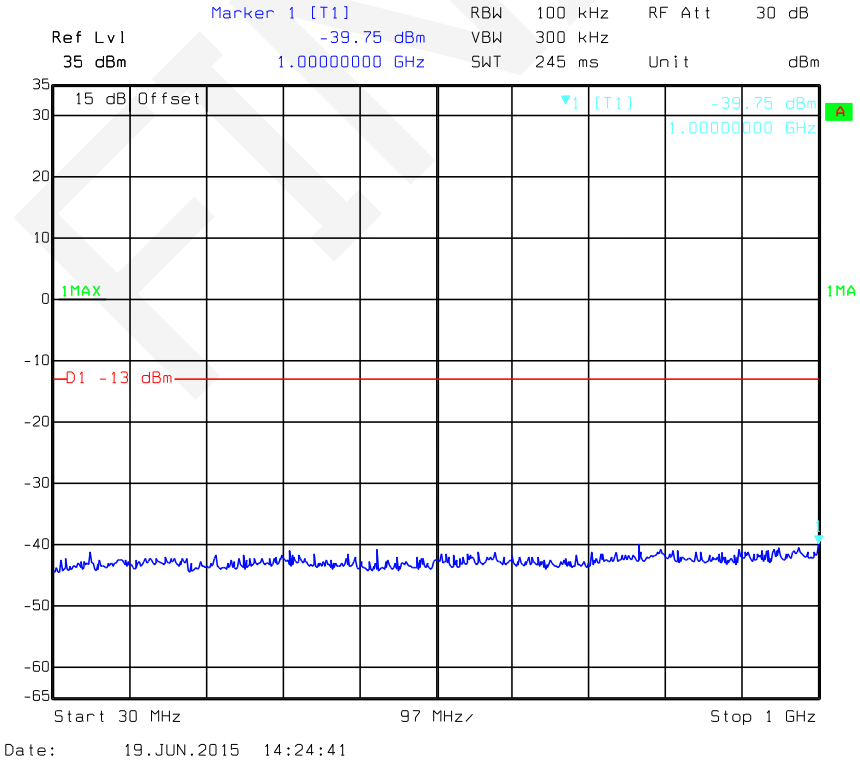
## QPSK_5MHz

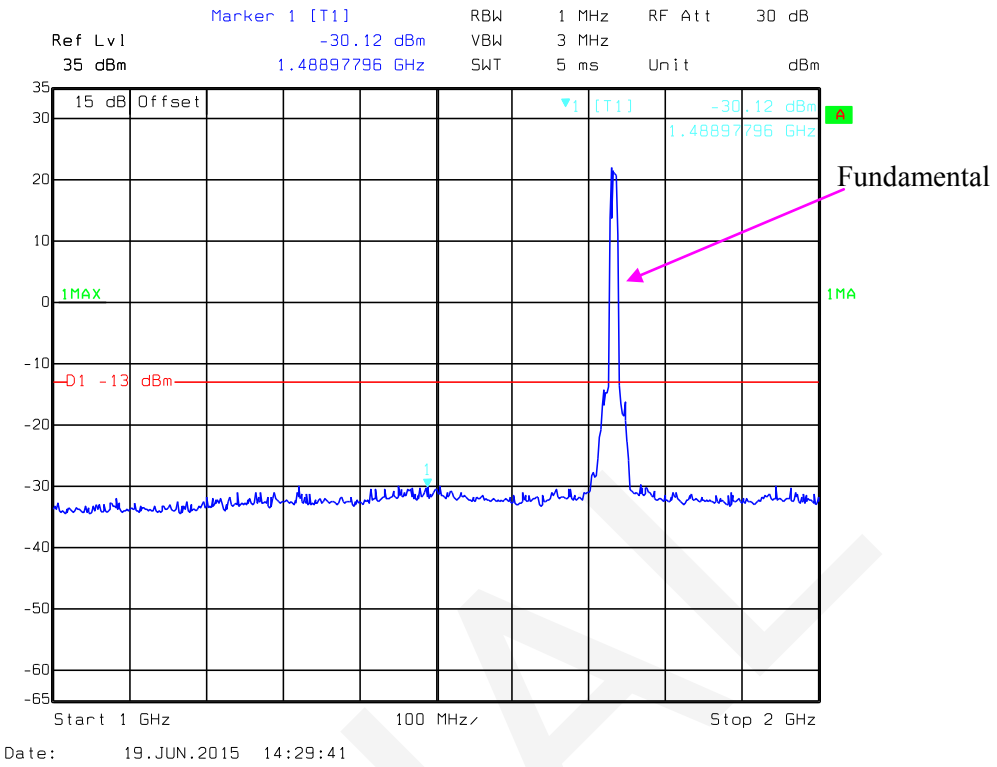

Marker 1 [T1]
-39.71 dBm
994.16833667 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:24:15

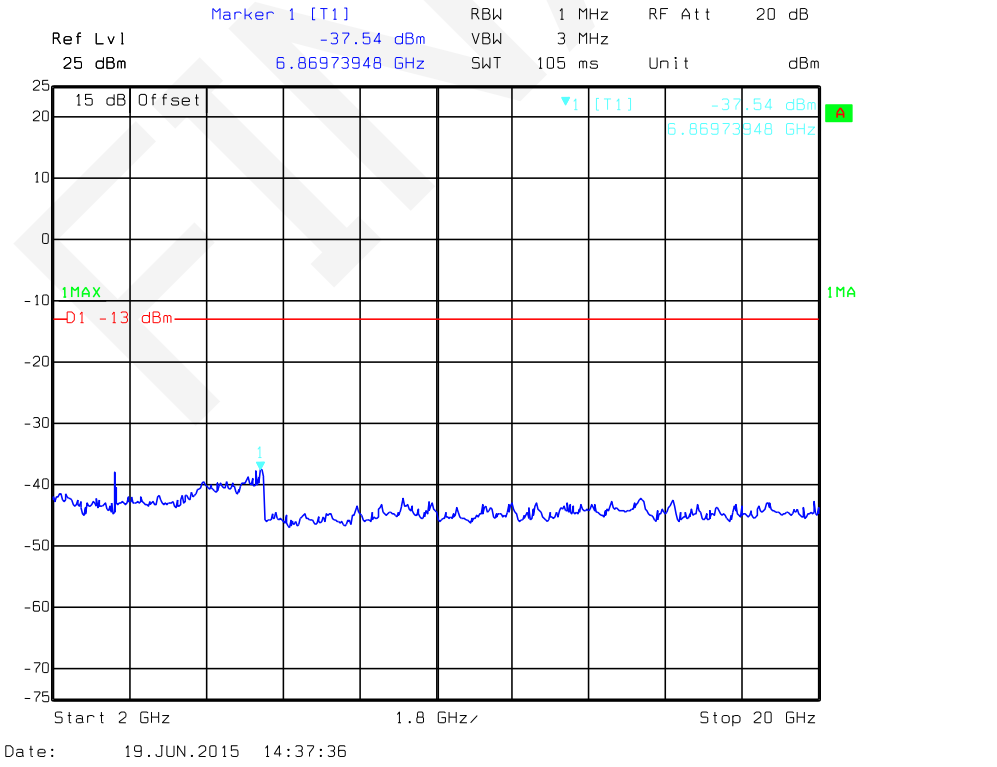

Marker 1 [T1]
-29.94 dBm
1.52104208 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 14:30:56
Fundamental


Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-37.37 dBm
VBW 3 MHz
25 dBm
6.90581162 GHz
SWT 105 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:36:51

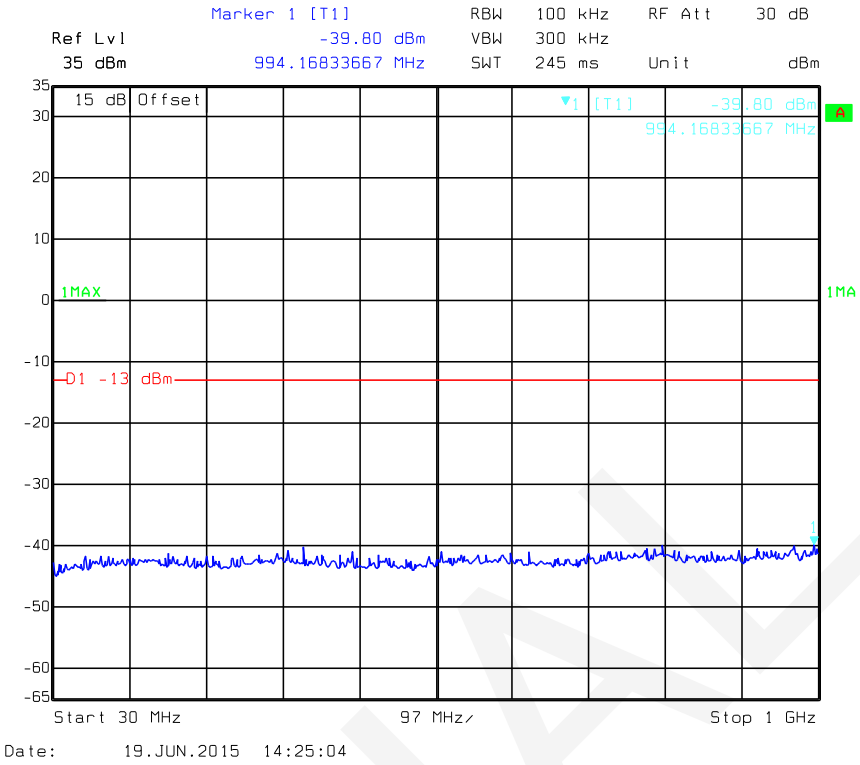
**QPSK_10MHz**

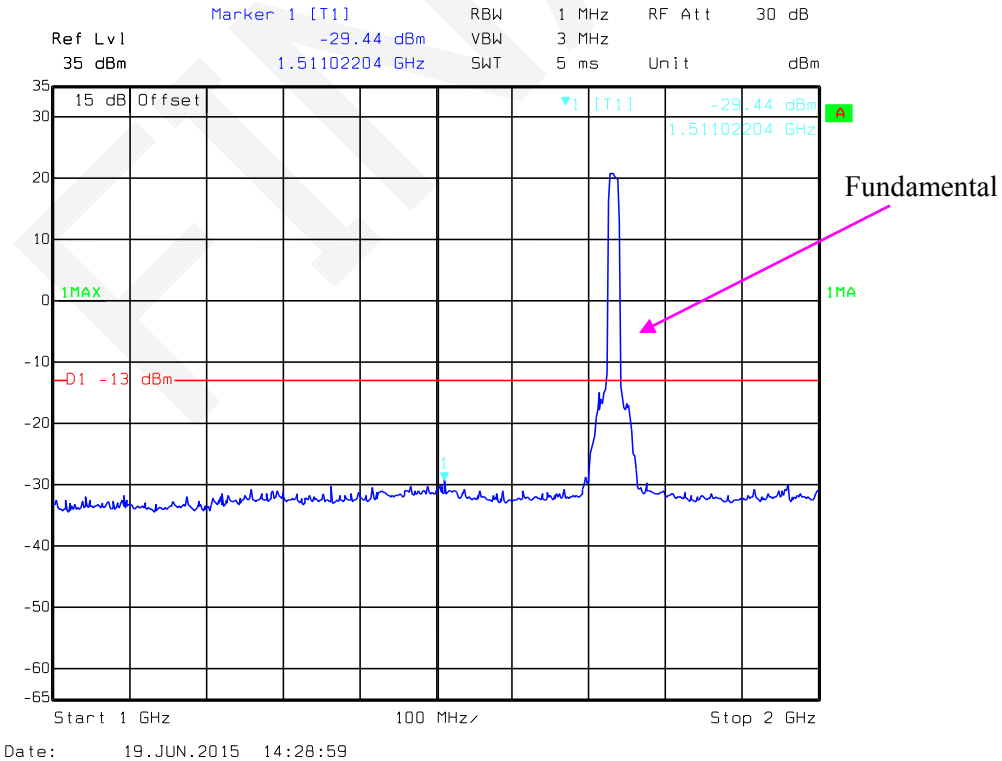

Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-39.75 dBm
VBW 300 kHz
35 dBm
1.00000000 GHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:24:41

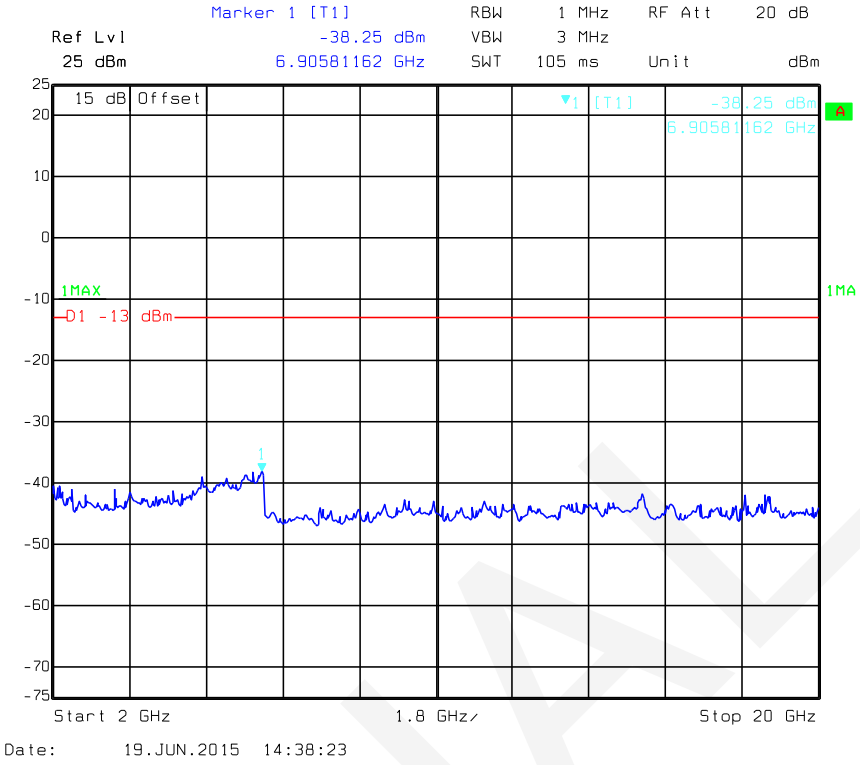

Marker 1 [T1]
-30.12 dBm
1.48897796 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 14:29:41


Marker 1 [T1]
-37.54 dBm
6.86973948 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:37:36

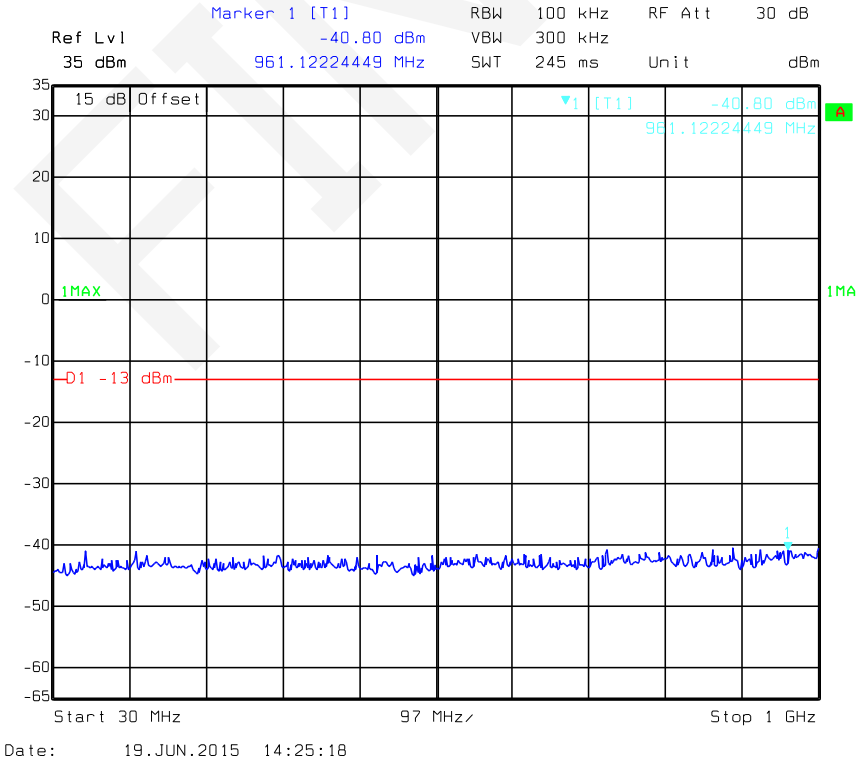
## QPSK_15MHz

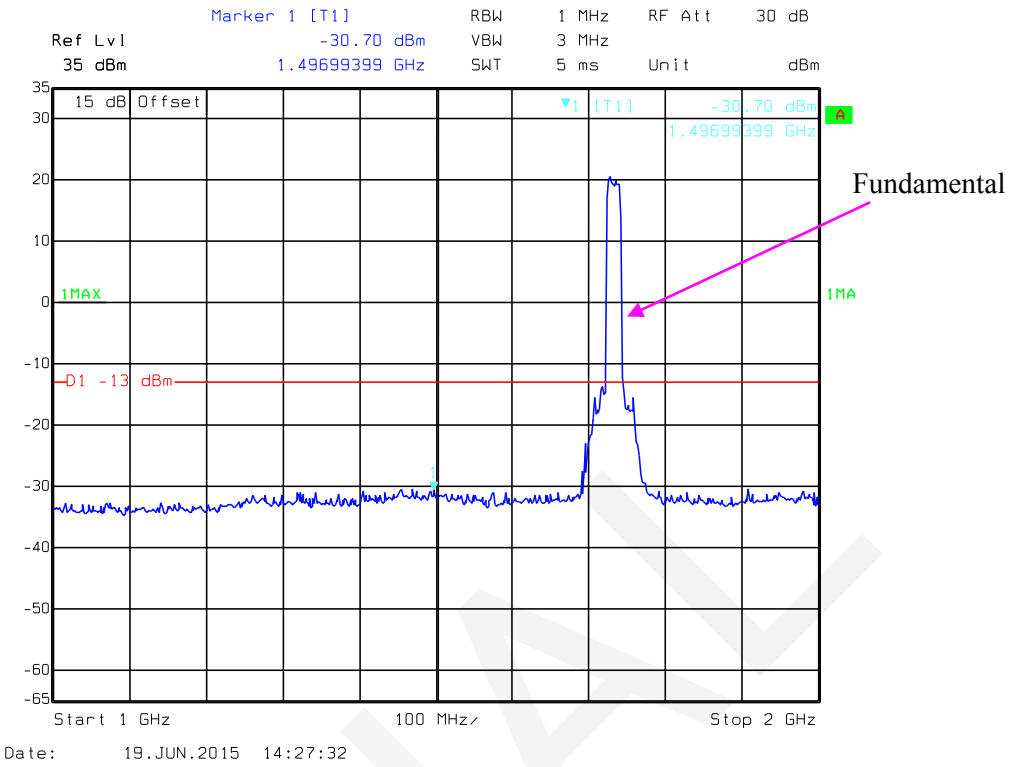

Marker 1 [T1]
Ref Lvl
35 dBm
-39.80 dBm
994.16833667 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:25:04

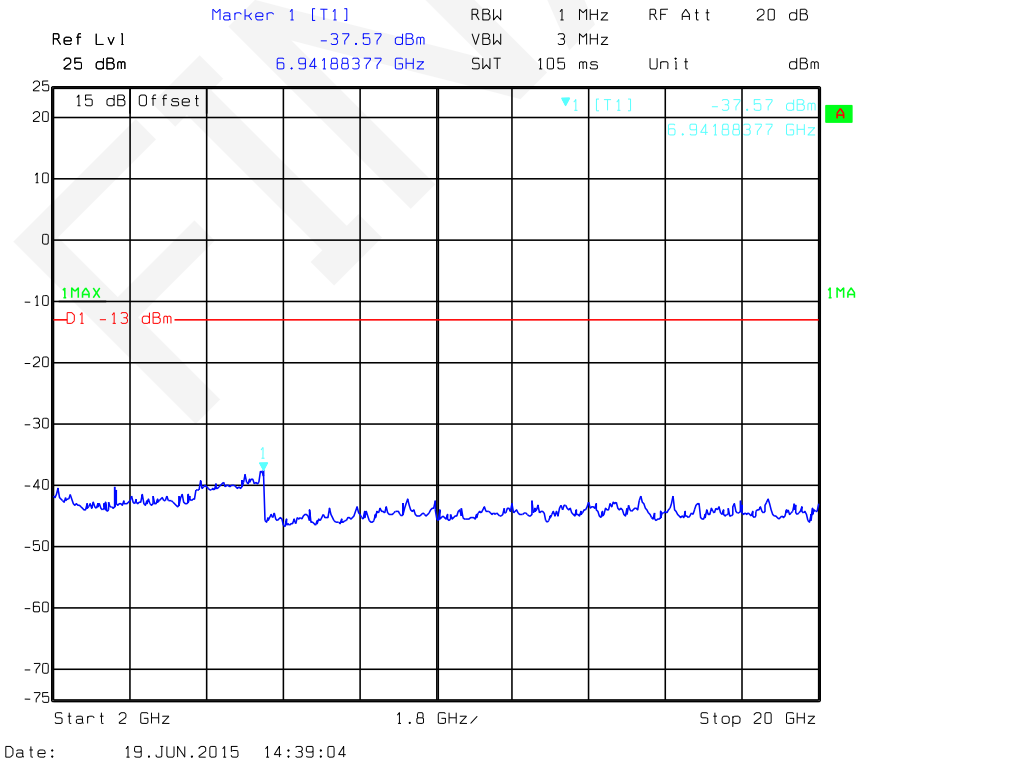

Marker 1 [T1]
Ref Lvl
35 dBm
-29.44 dBm
1.51102204 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 14:28:59


Marker 1 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-38.25 dBm
VBW 3 MHz
25 dBm
6.90581162 GHz
SWT 105 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:38:23

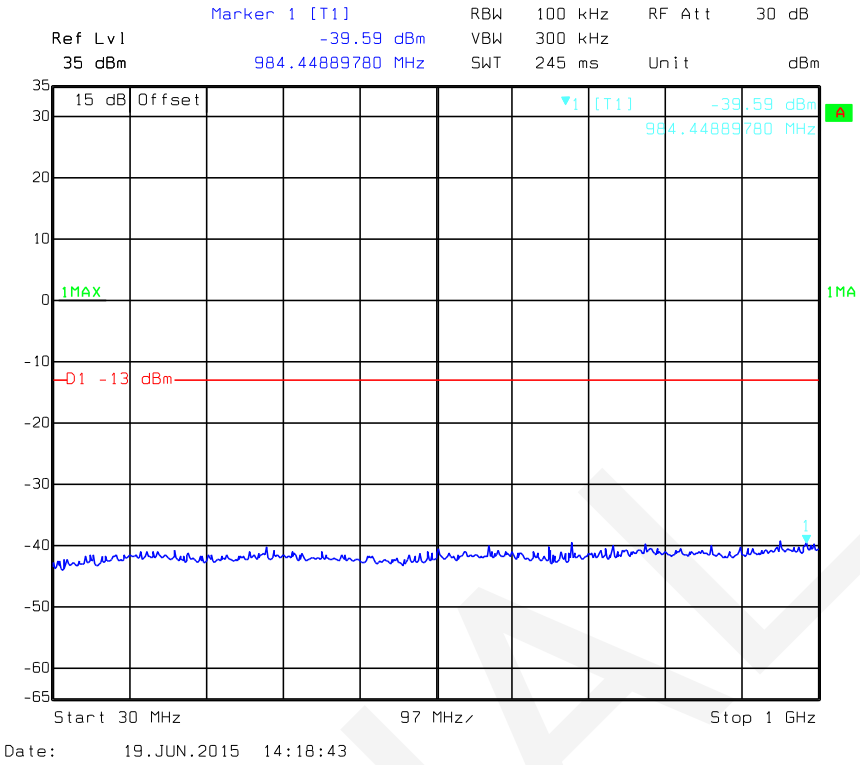
**QPSK_20MHz**

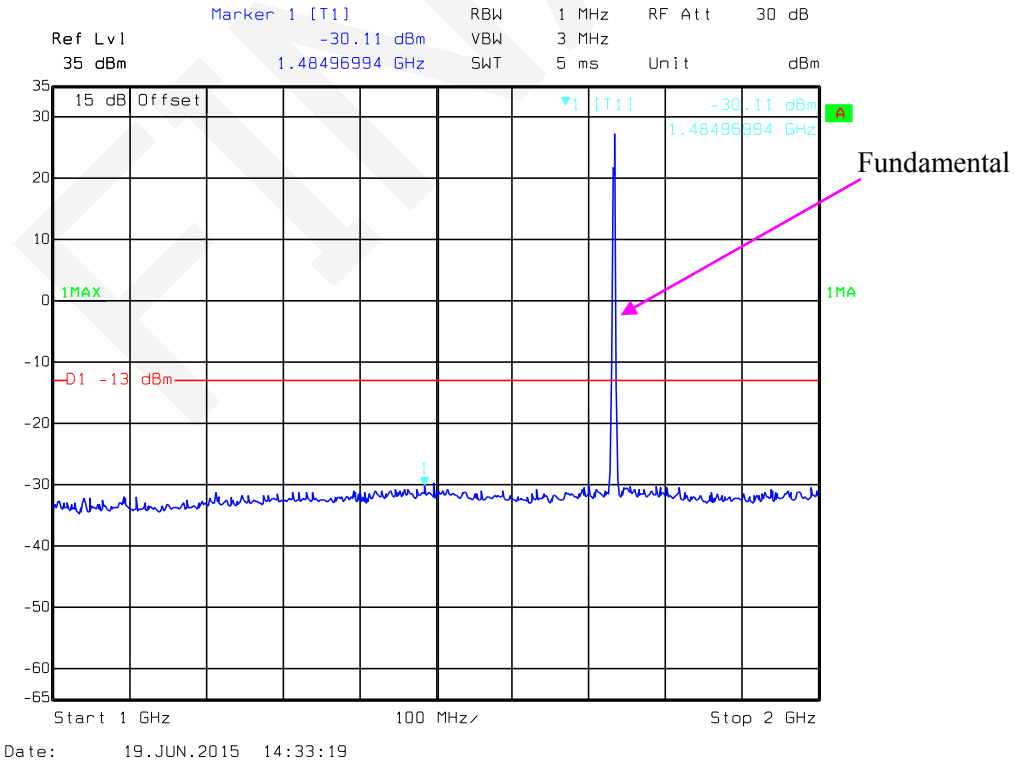

Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-40.80 dBm
VBW 300 kHz
35 dBm
961.12224449 MHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:25:18

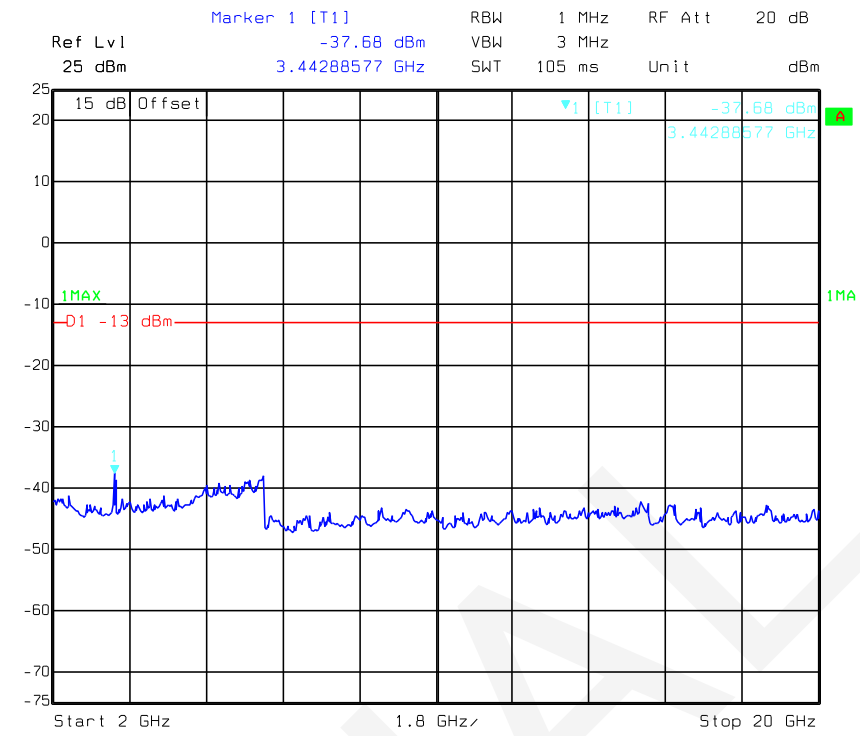

Marker 1 [T1]
-30.70 dBm
1.49699399 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 14:27:32


Marker 1 [T1]
-37.57 dBm
6.94188377 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:39:04

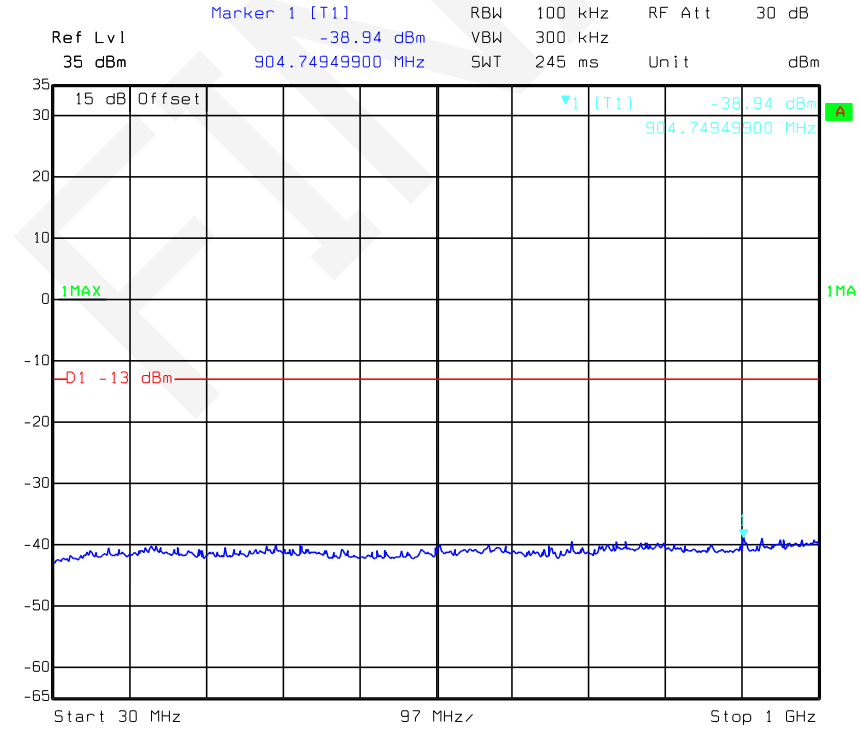
## 16QAM_1.4 MHz

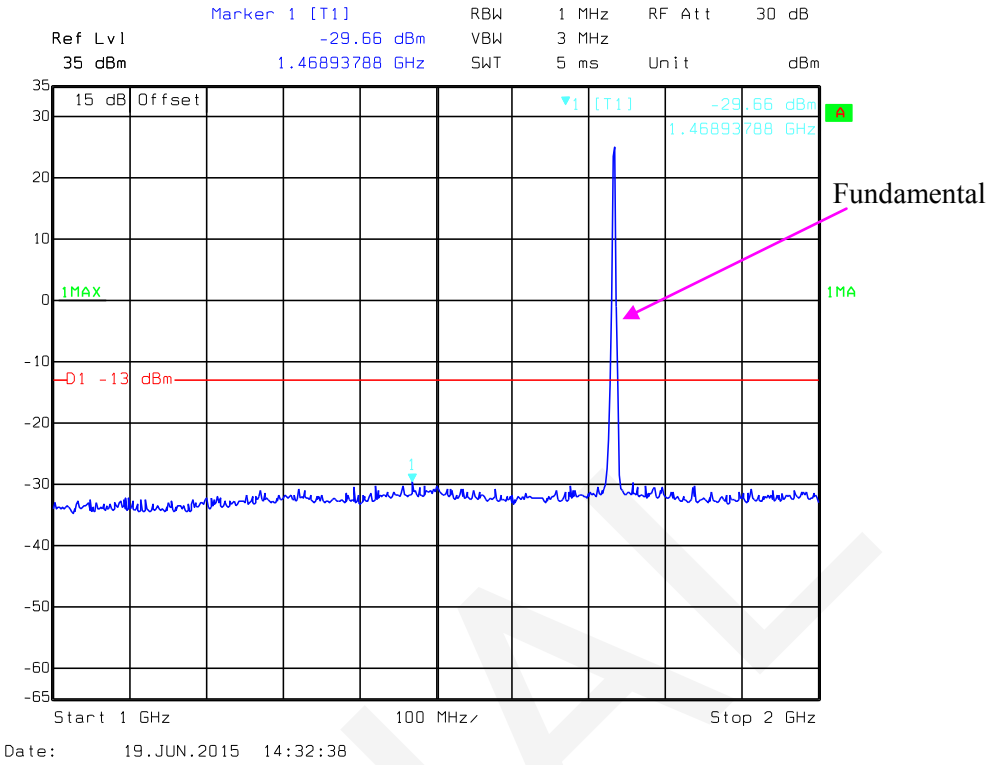

Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-39.59 dBm
VBW 300 kHz
35 dBm
984.44889780 MHz
SWT 245 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:18:43

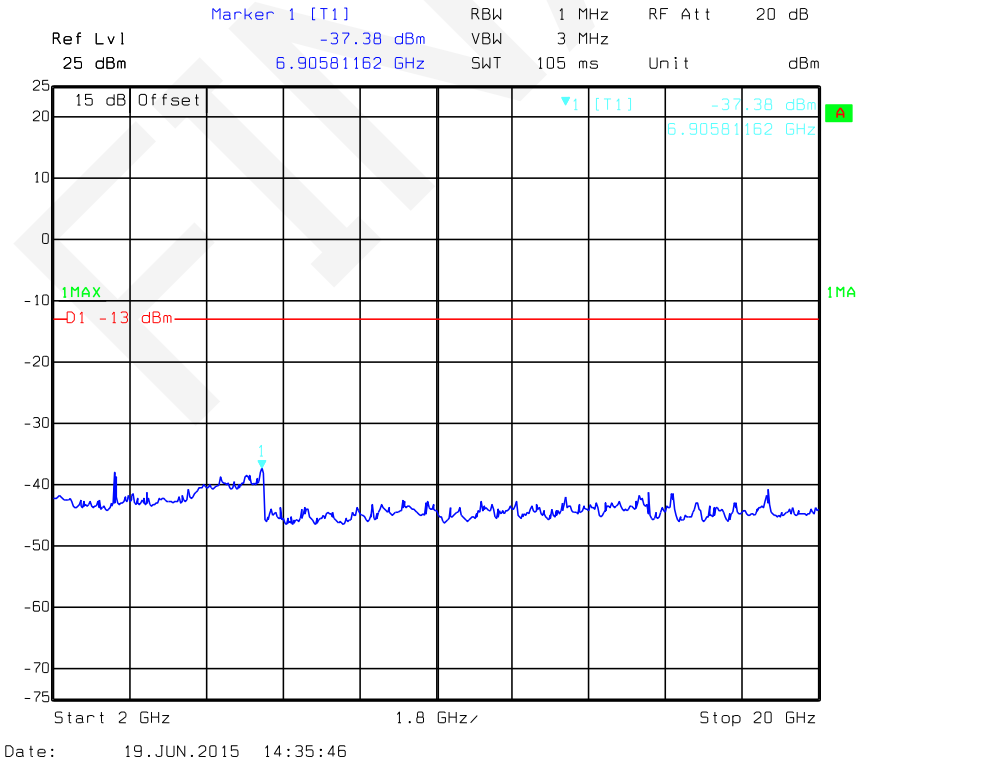

Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
-30.11 dBm
VBW 3 MHz
35 dBm
1.48496994 GHz
SWT 5 ms
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 14:33:19


Marker 1 [T1]
-37.68 dBm
3.44288577 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:34:51

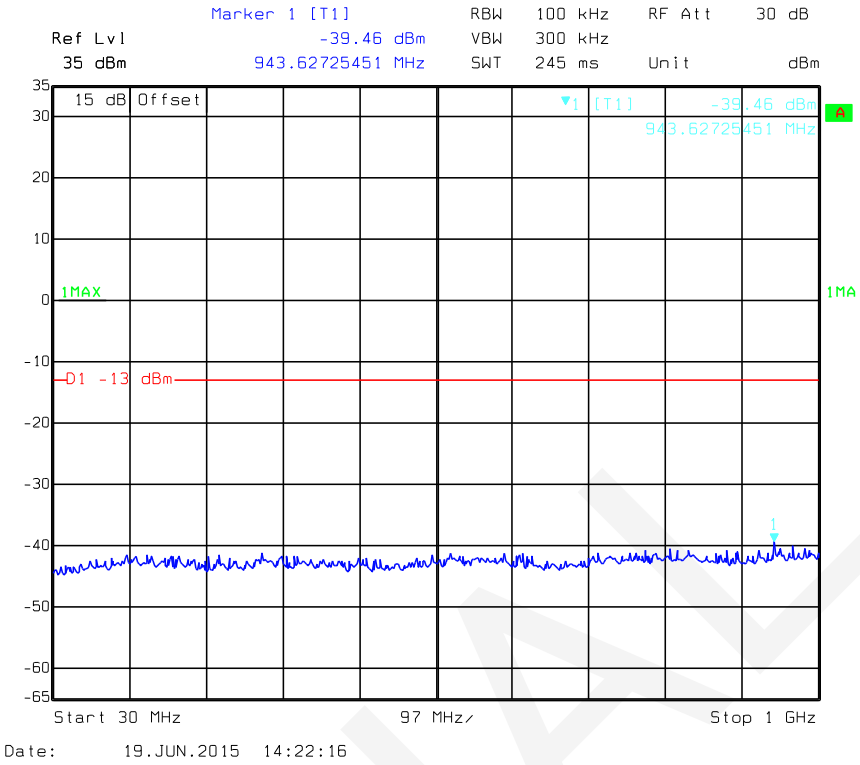
**16QAM_3 MHz**

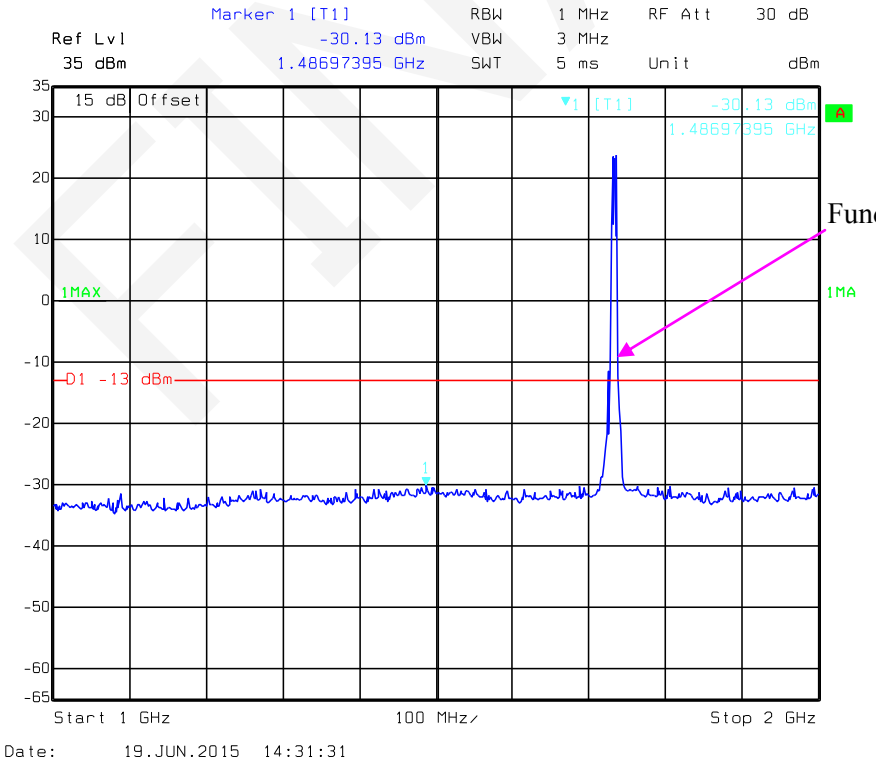

Marker 1 [T1]
-38.94 dBm
904.74949900 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:21:59

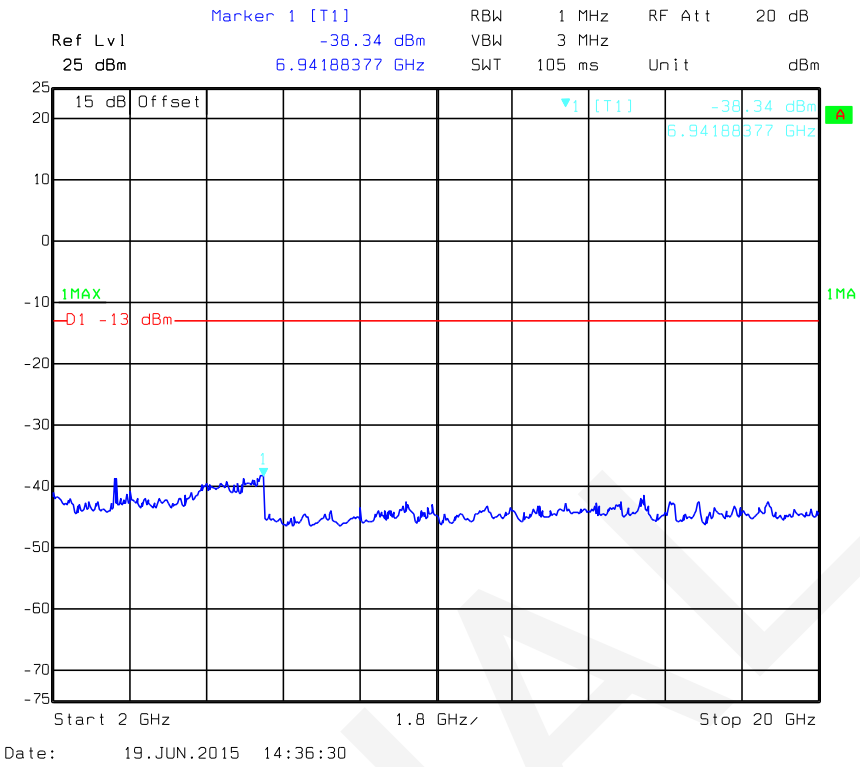

Marker 1 [T1]
-29.66 dBm
1.46893788 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 1 GHz
100 MHz/
Stop 2 GHz
Fundamental
Date: 19.JUN.2015 14:32:38


Marker 1 [T1]
-37.38 dBm
6.90581162 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:35:46

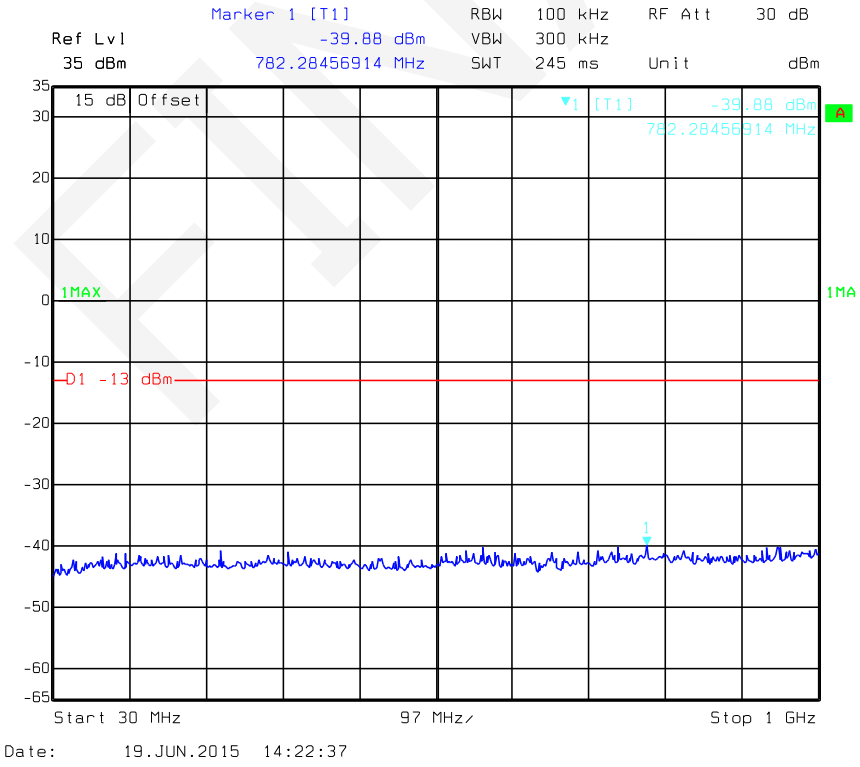
## 16QAM_5MHz


Marker 1 [T1]
Ref Lvl
35 dBm
-39.46 dBm
943.62725451 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:22:16


Marker 1 [T1]
Ref Lvl
35 dBm
-30.13 dBm
1.48697395 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
15 dB Offset
1MAX
D1 -13 dBm
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 19.JUN.2015 14:31:31


Marker 1 [T1]
-38.34 dBm
6.94188377 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
25 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 19.JUN.2015 14:36:30

**16QAM_10MHz**


Marker 1 [T1]
-39.88 dBm
782.28456914 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 30 dB
Unit dBm
Ref Lvl
35 dBm
15 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 19.JUN.2015 14:22:37