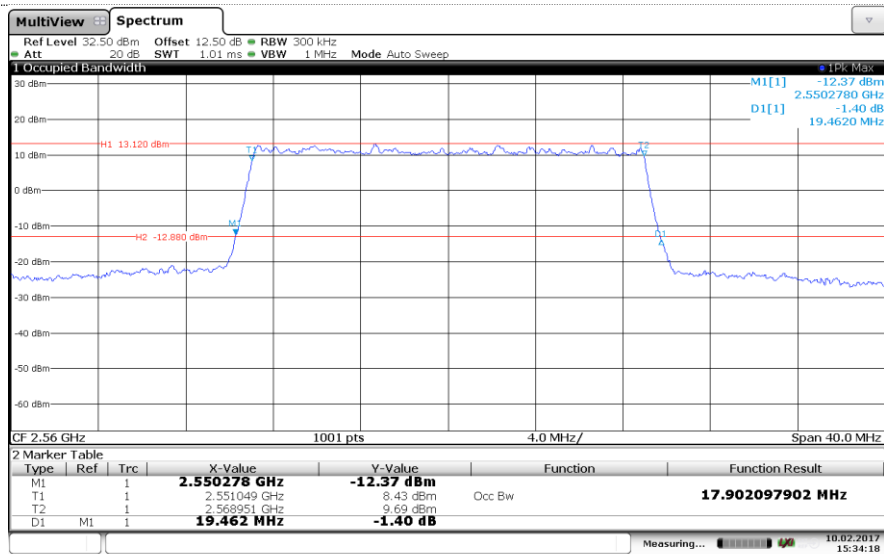## LTE Band 7-20MHz

QPSK

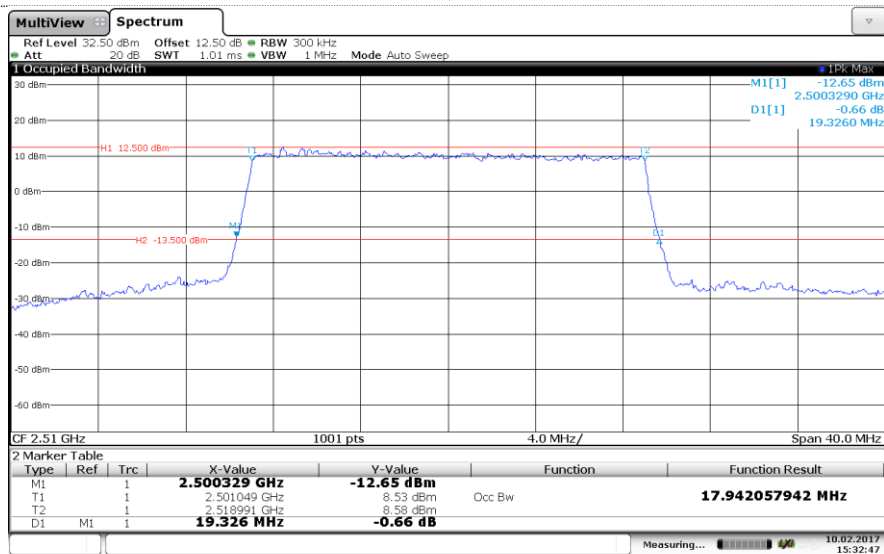

Channel Low

Channel Mid
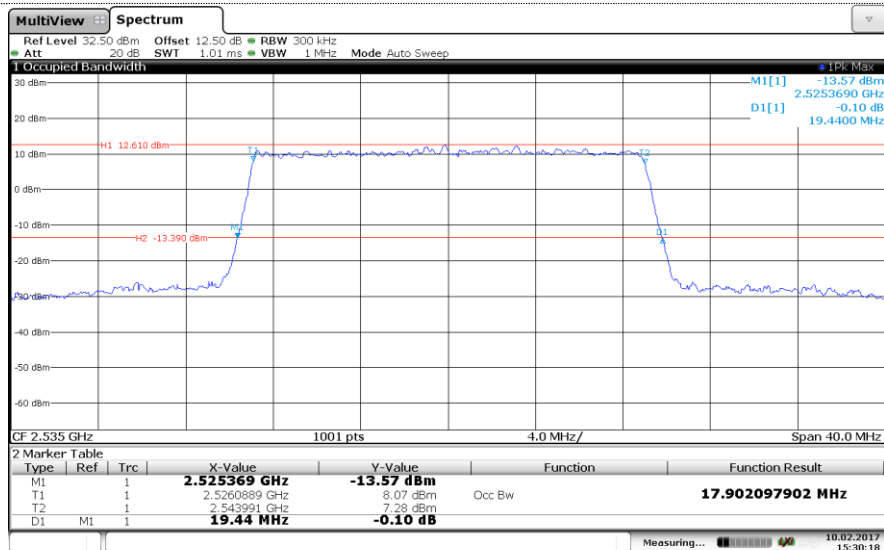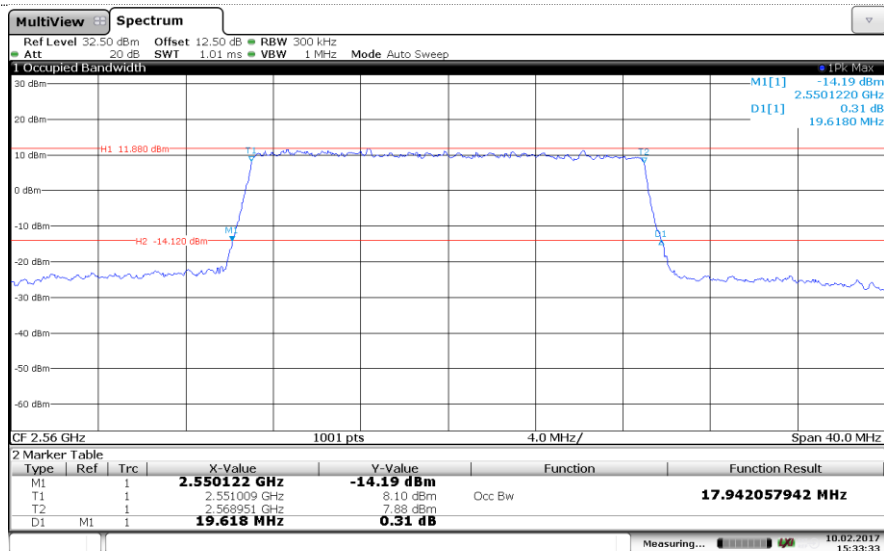

Channel High

LTE Band 7-20MHz
16QAM

Channel Low

Channel Mid

Channel High

## 5.3. Conducted Spurious Emissions

<u>LIMIT</u>

Part 24.238 and Part 27.53 h(1) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

LTE Band 7

Part 27.53 m(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. Limit <-25 dBm

<u>TEST CONFIGURATION</u>
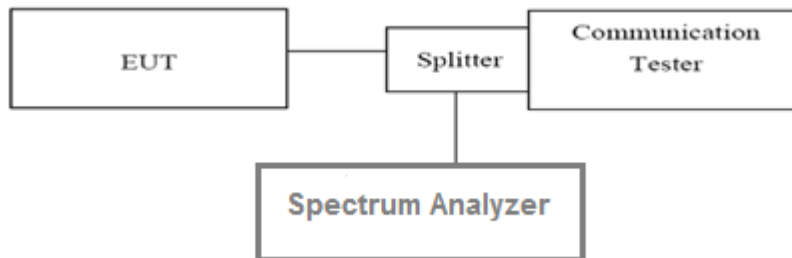
<u>TEST PROCEDURE</u>

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.

2. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficientscans were taken to show the out of band Emissions if any up to 10th harmonic.

3. For the out of band: Set the RBW= 1MHz, VBW = 3MHz, Start=30MHz, Stop= 10th harmonic.
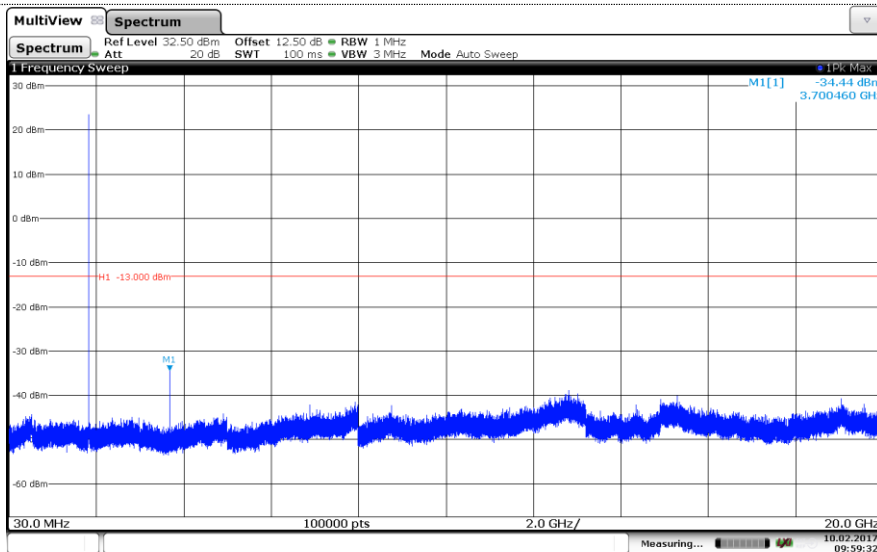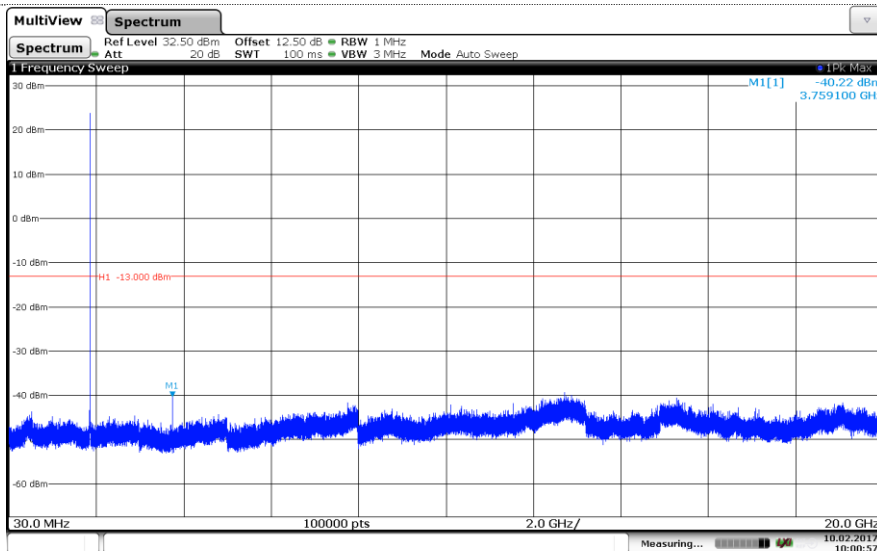
<u>TEST MODE:</u>
Please refer to the clause 3.3

<u>TEST RESULTS</u>

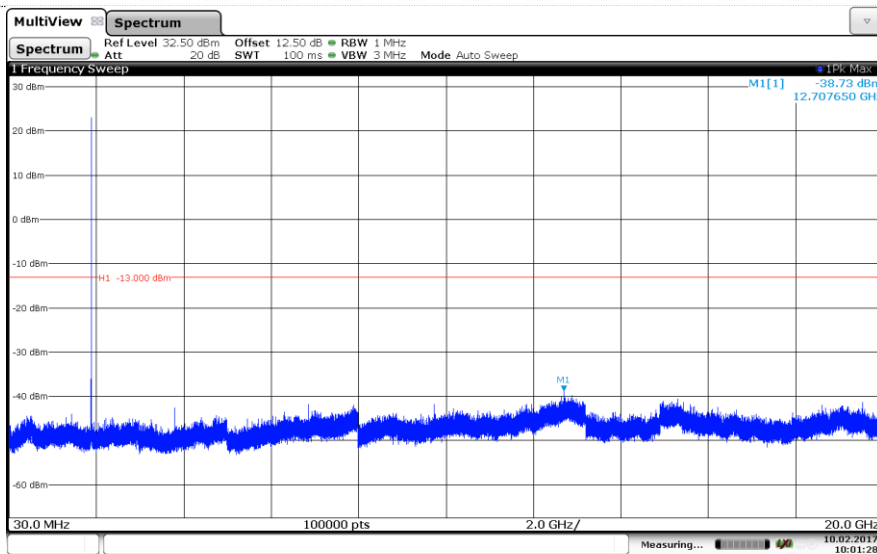☒ **Passed**   ☐ **Not Applicable**

LTE Band 2-1.4MHz
QPSK

Channel Low

Channel Mid

Channel High

LTE Band 2-1.4MHz
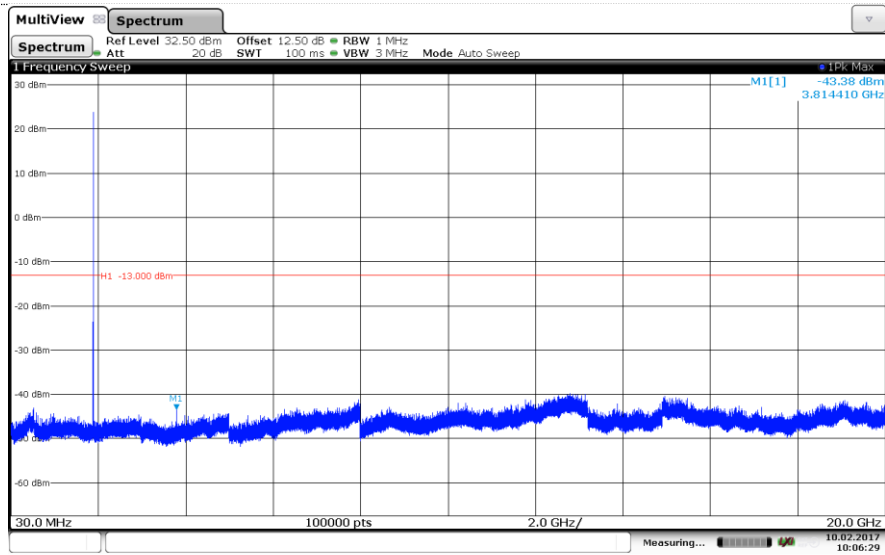### 16QAM
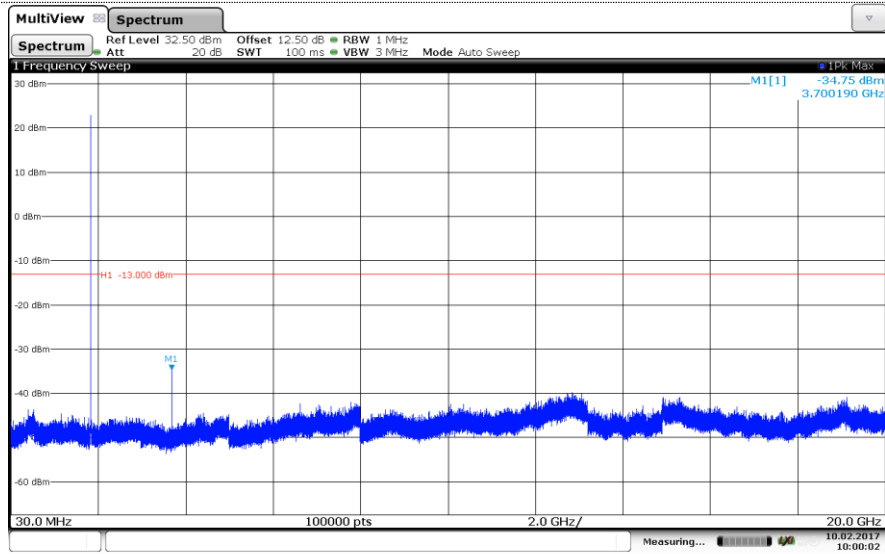
Channel Low
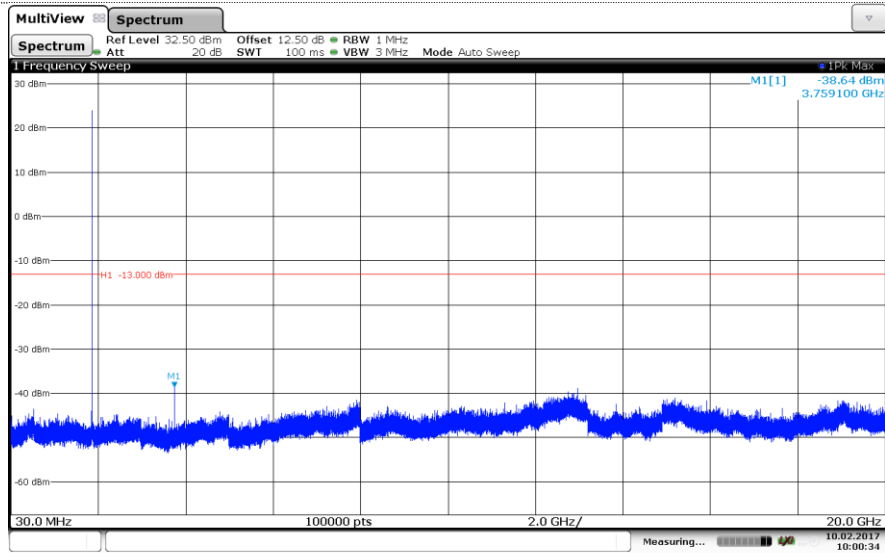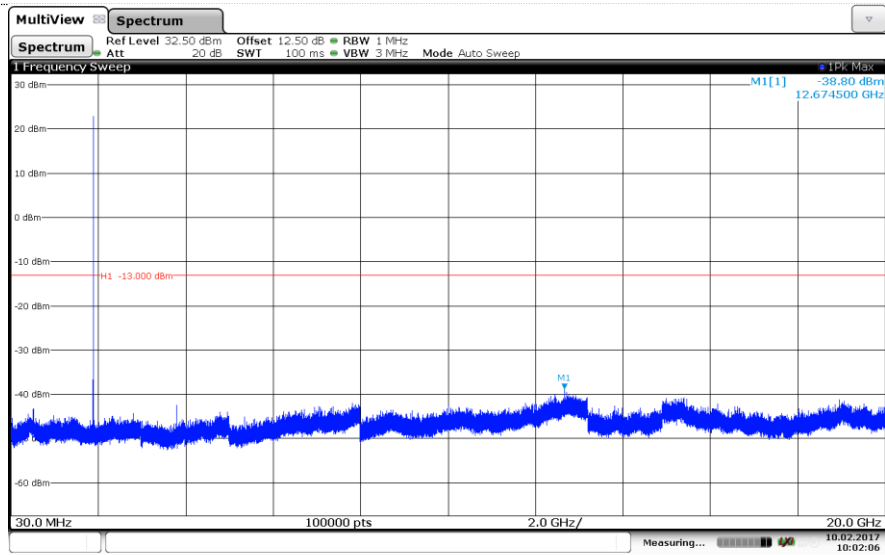
Channel Mid

Channel High

LTE Band 2-3MHz
QPSK
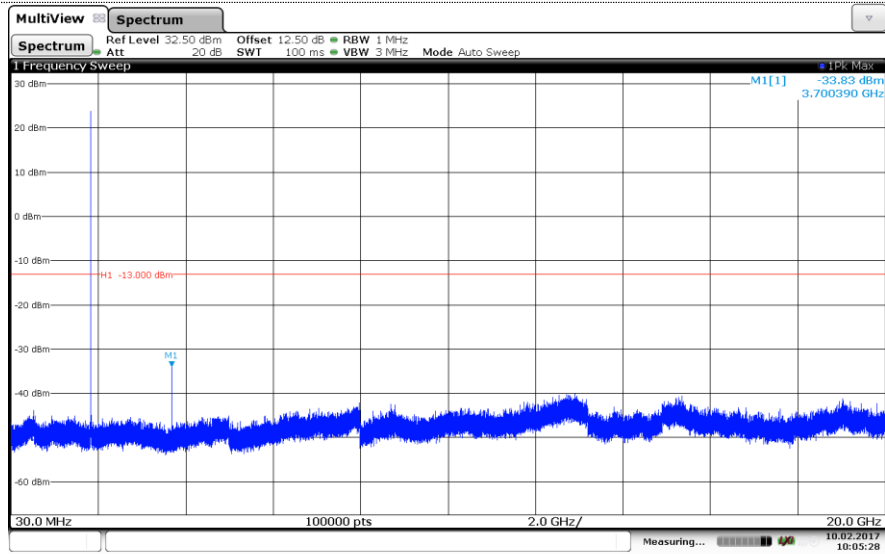
Channel Low
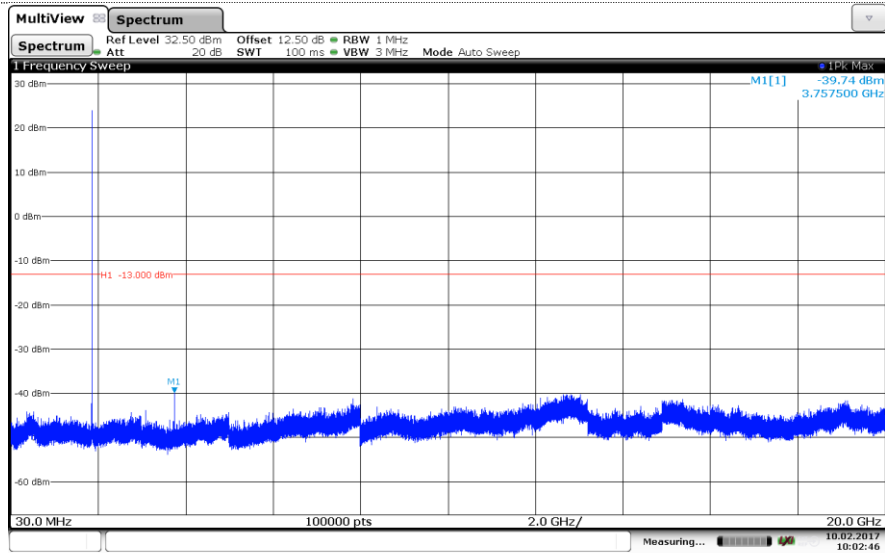
Channel Mid
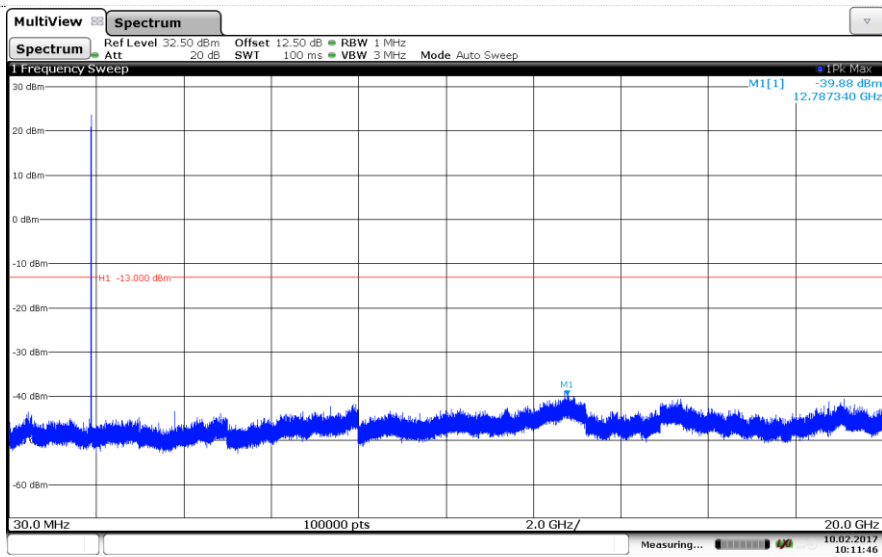

Channel High

LTE Band 2-3MHz
16QAM
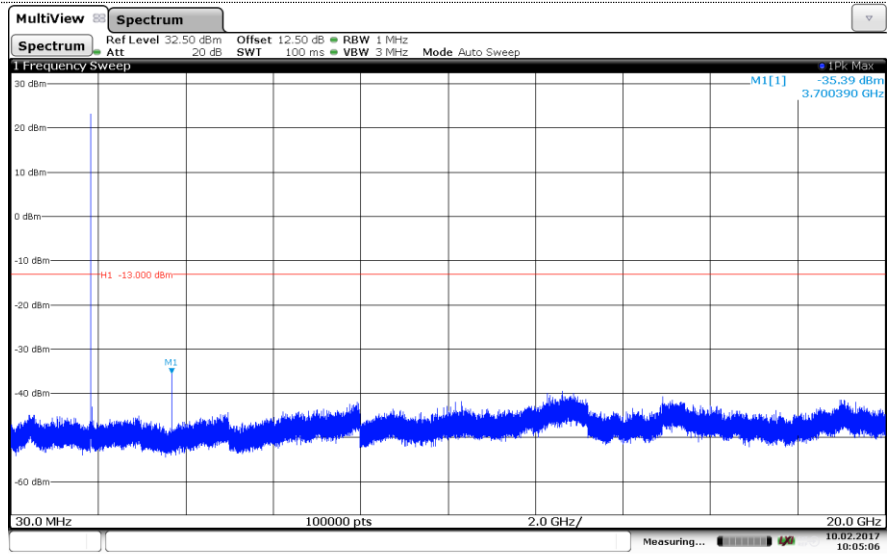
Channel Low
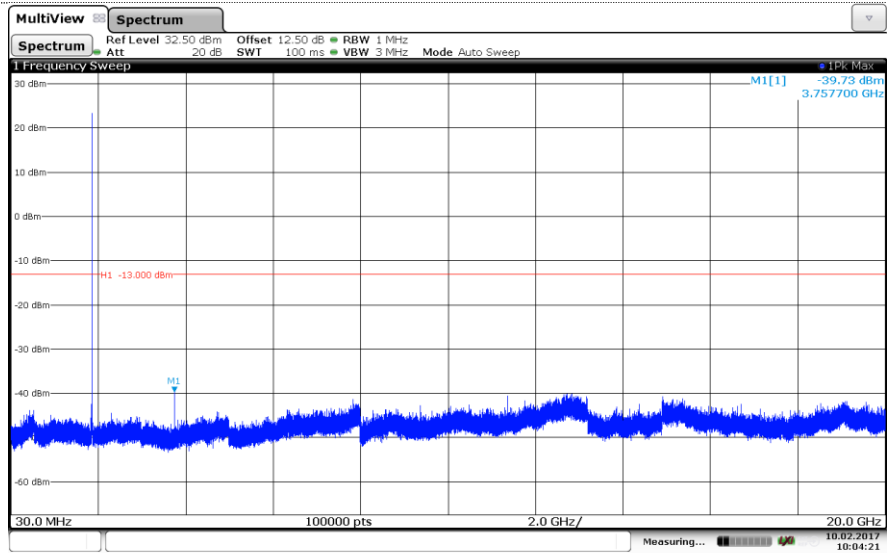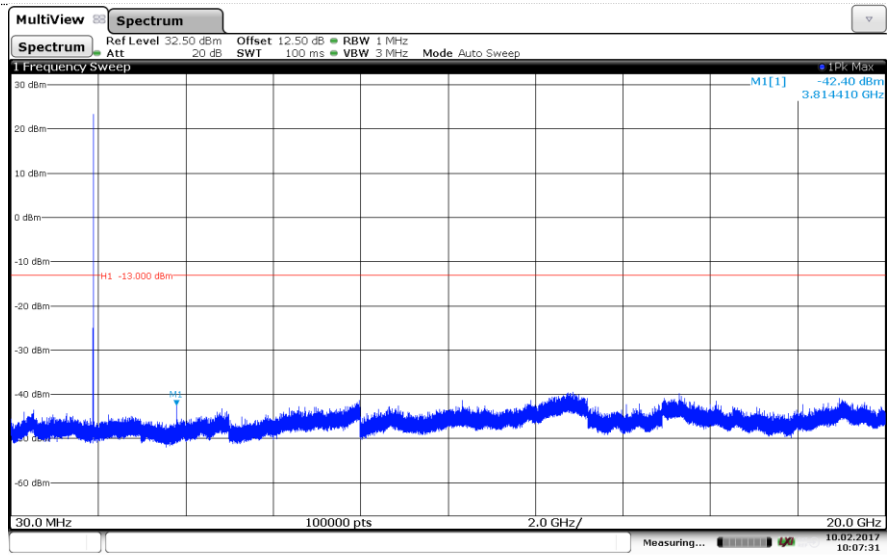
Channel Mid

Channel High

LTE Band 2-5MHz
QPSK
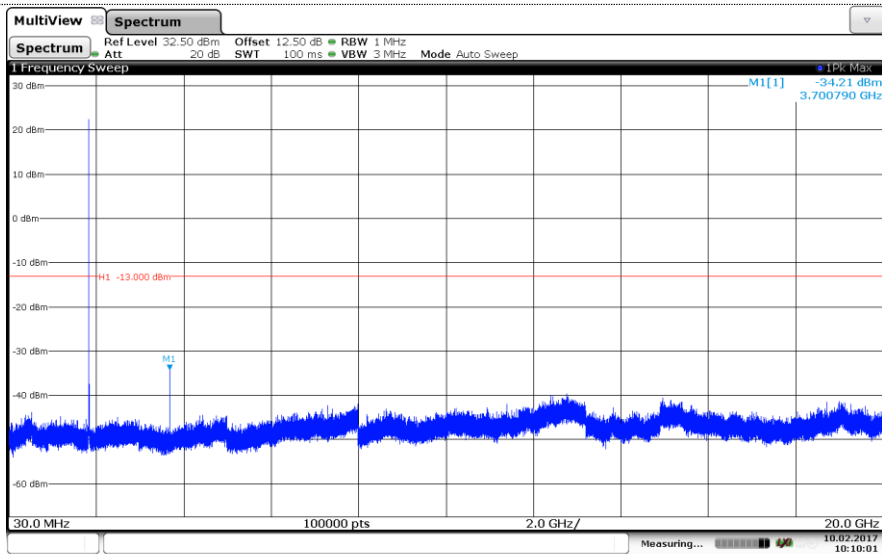
Channel Low
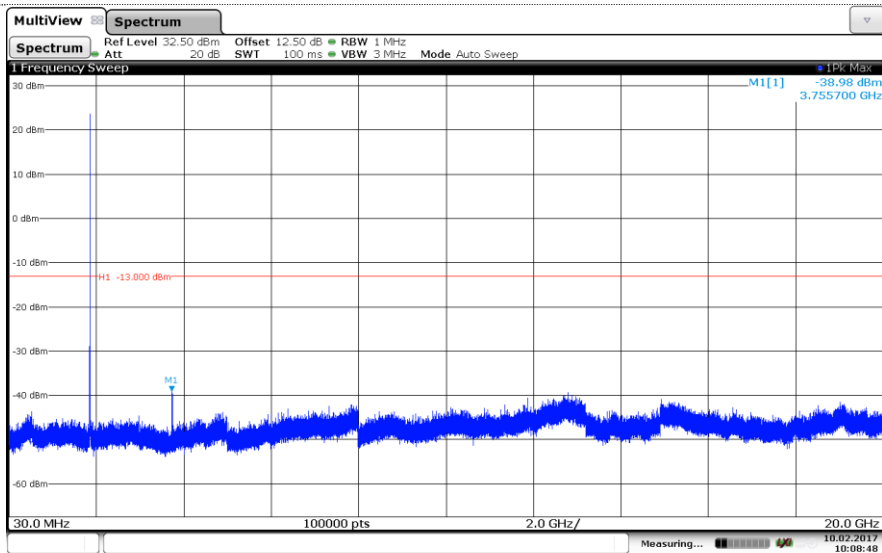
Channel Mid

Channel High

LTE Band 2-5MHz
16QAM
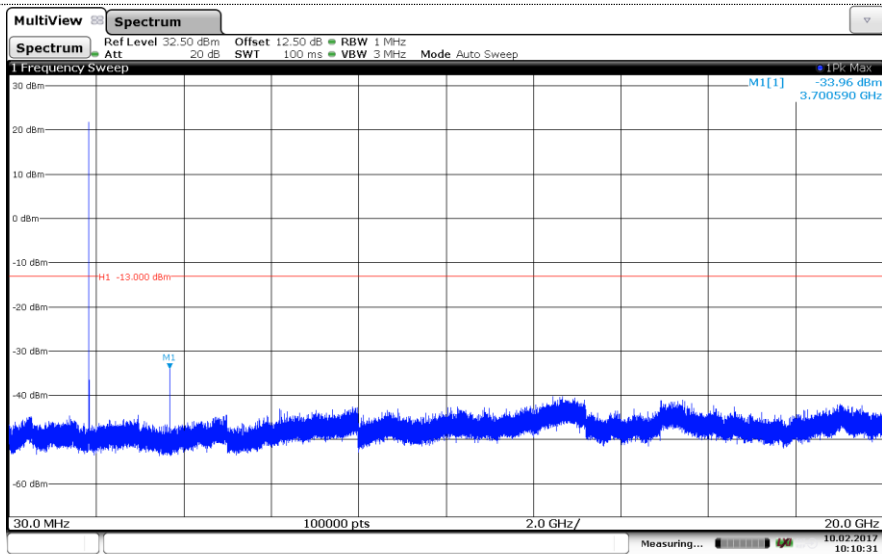
Channel Low

Channel Mid

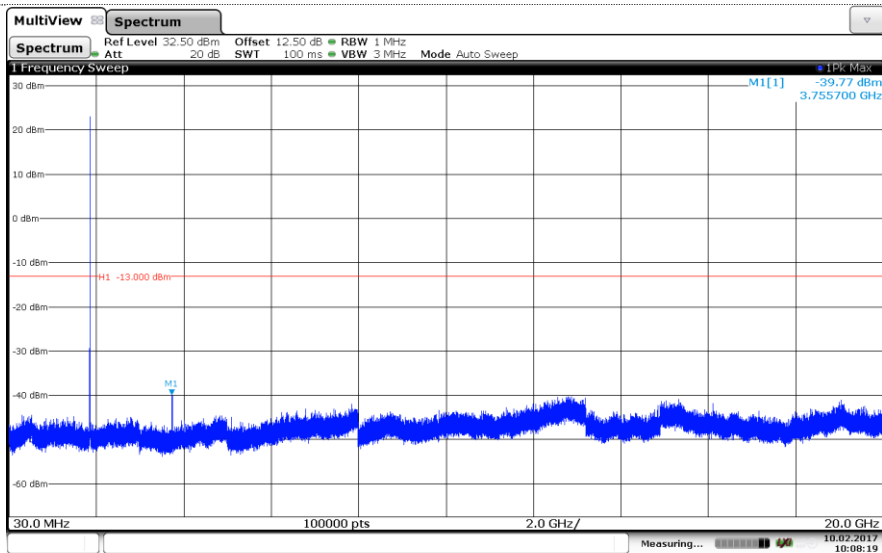

Channel High

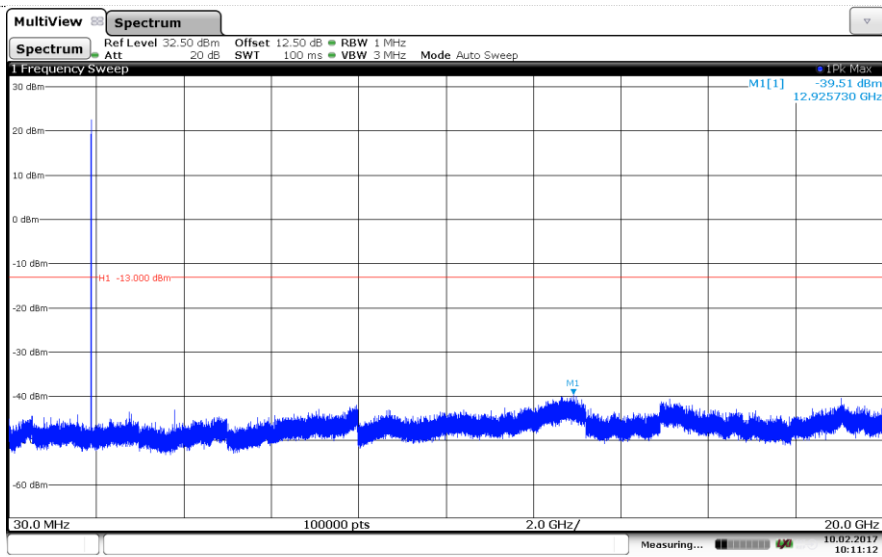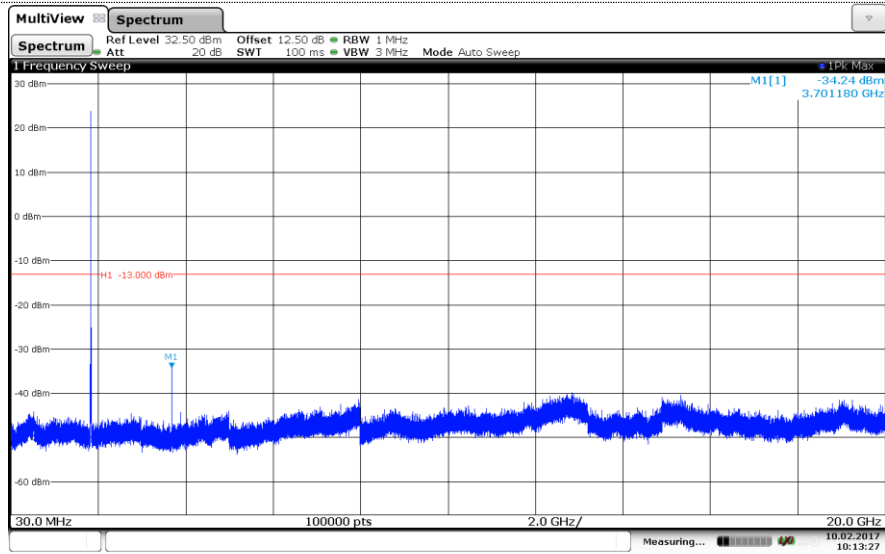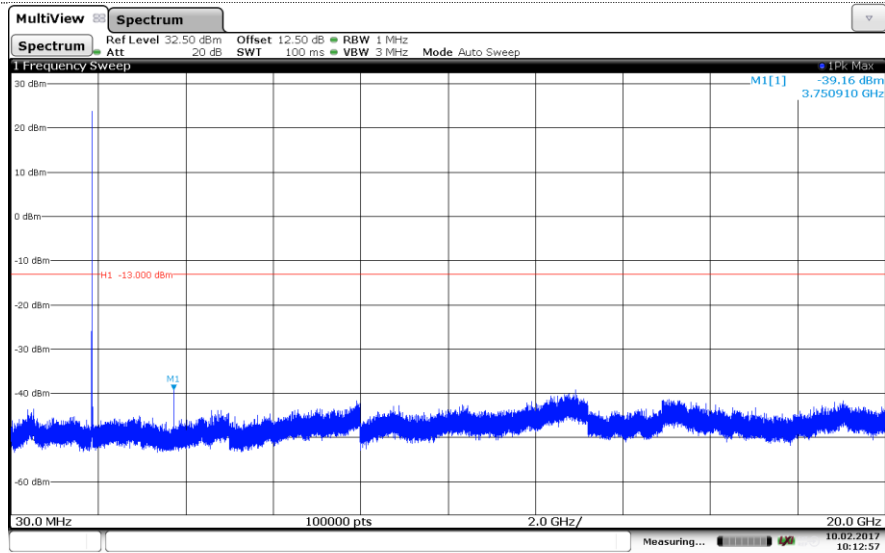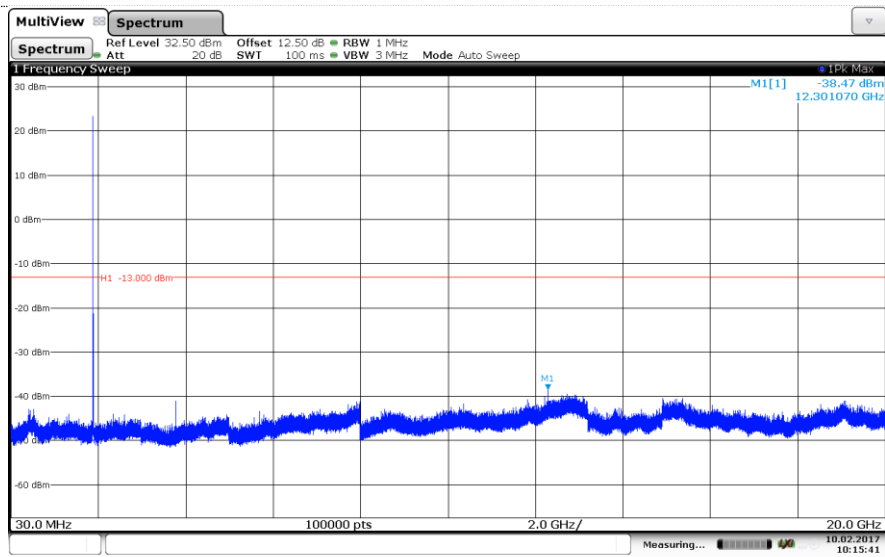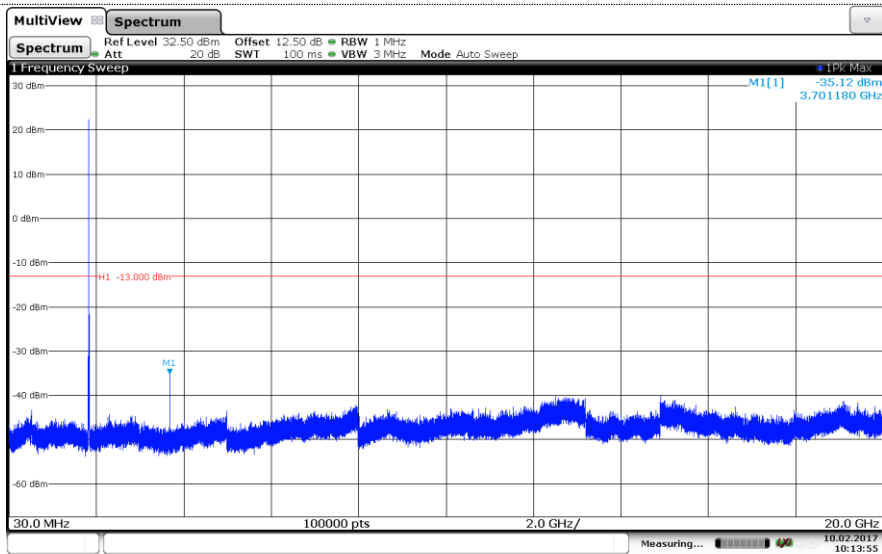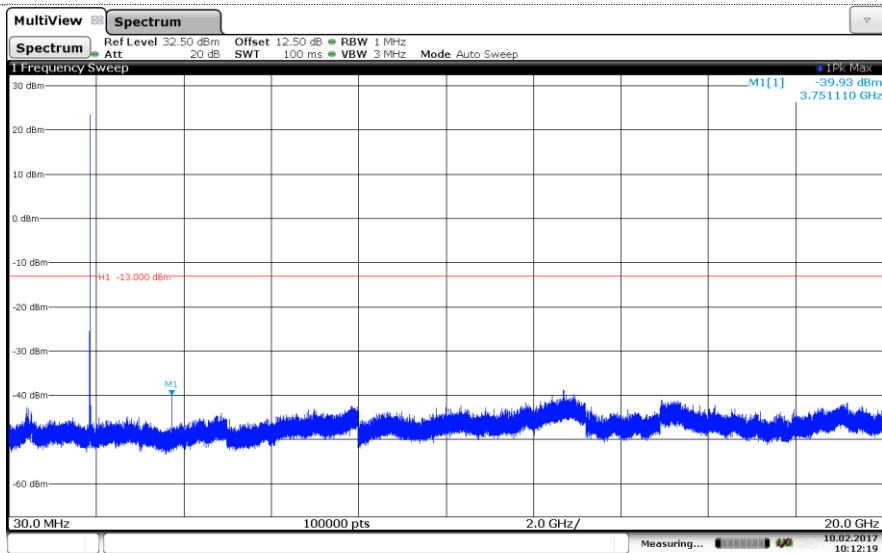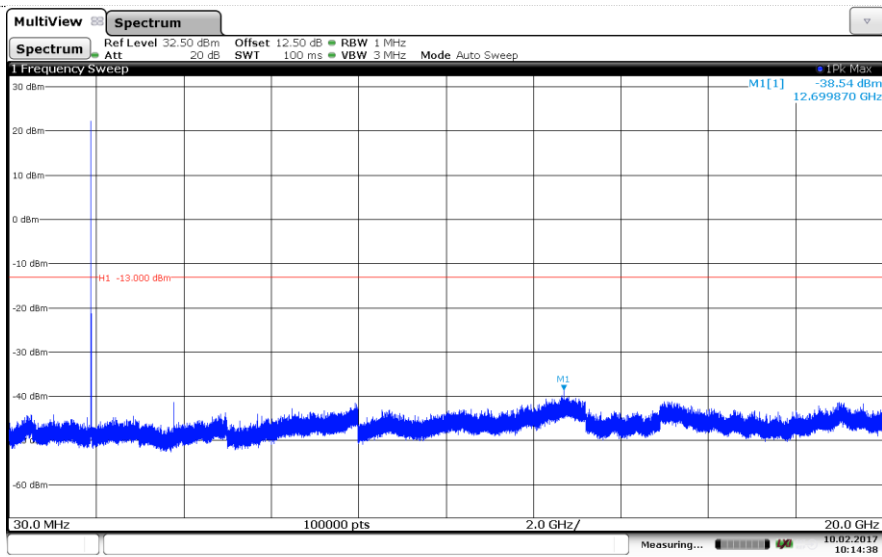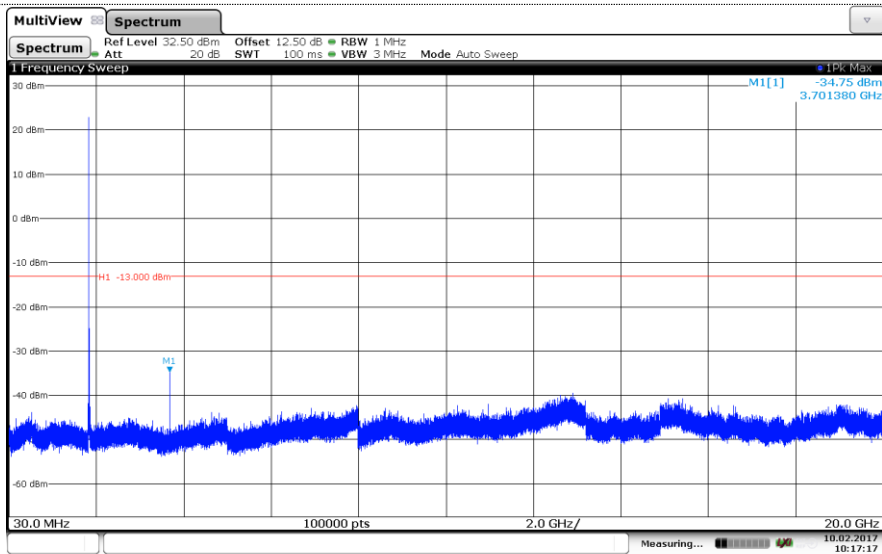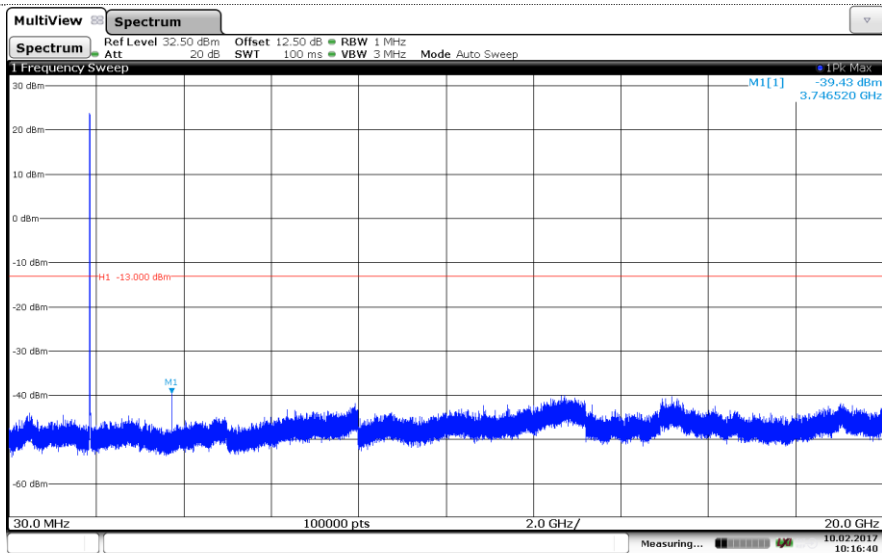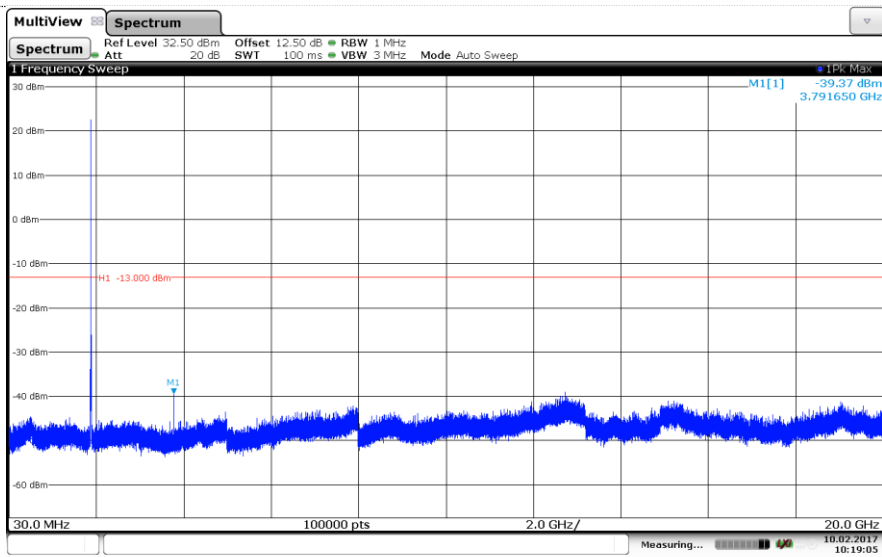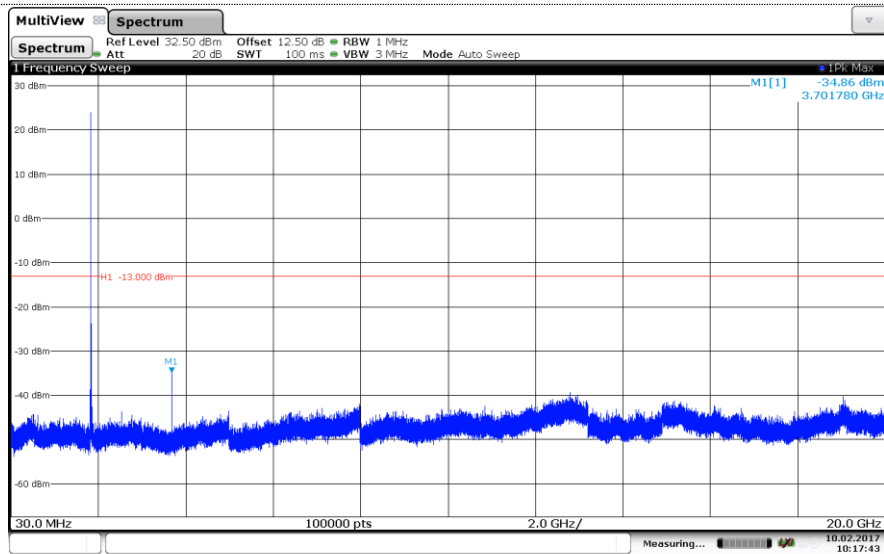LTE Band 2-10MHz

QPSK

Channel Low

Channel Mid

Channel High

LTE Band 2-10MHz
16QAM

Channel Low

Channel Mid

Channel High

LTE Band 2-15MHz

QPSK

Channel Low

Channel Mid

Channel High

LTE Band 2-15MHz
16QAM

Channel Low
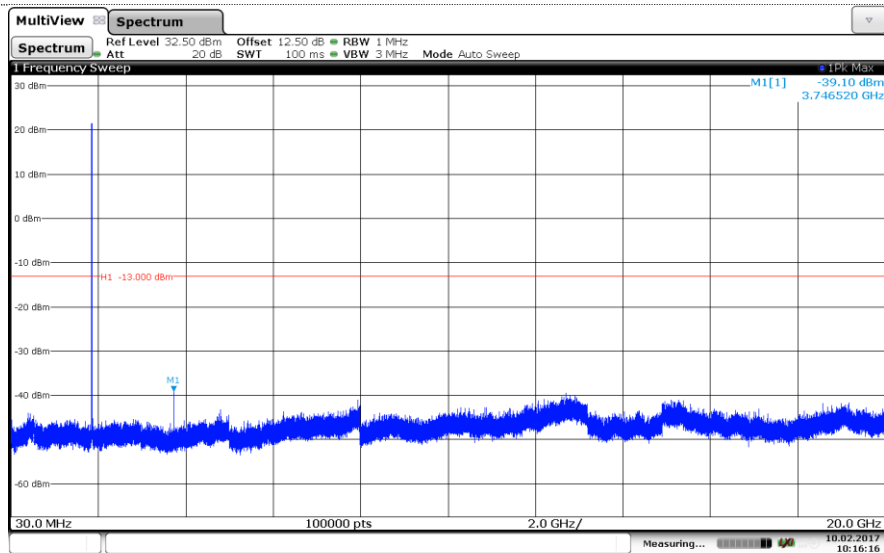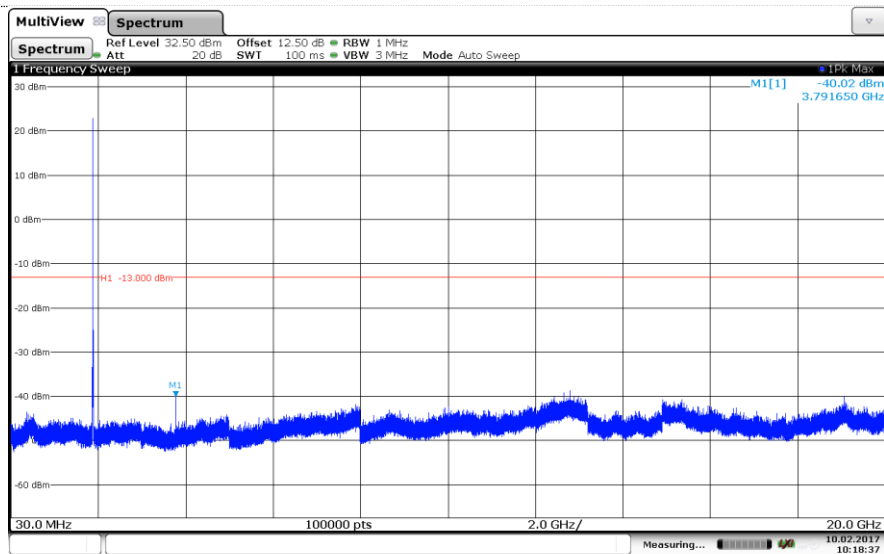
Channel Mid

Channel High

LTE Band 2-20MHz
QPSK
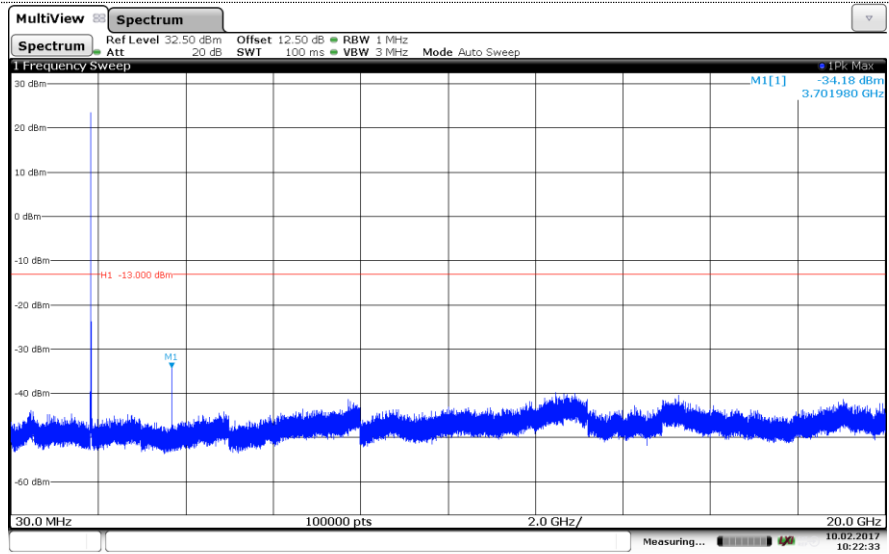
Channel Low
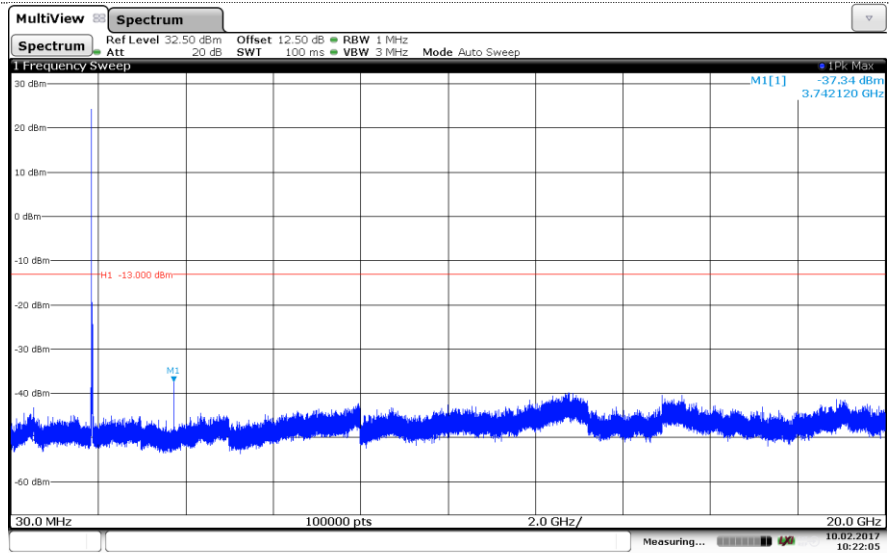
Channel Mid

Channel High

LTE Band 2-20MHz
16QAM
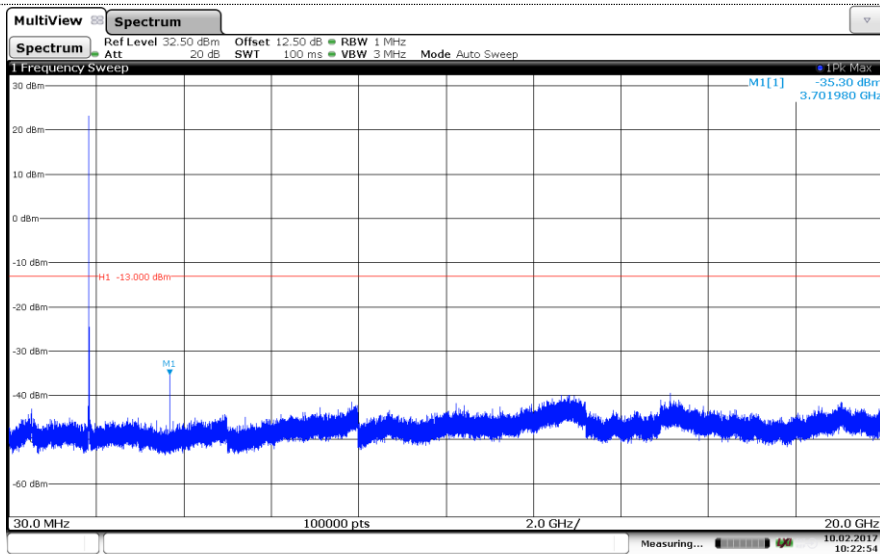
Channel Low
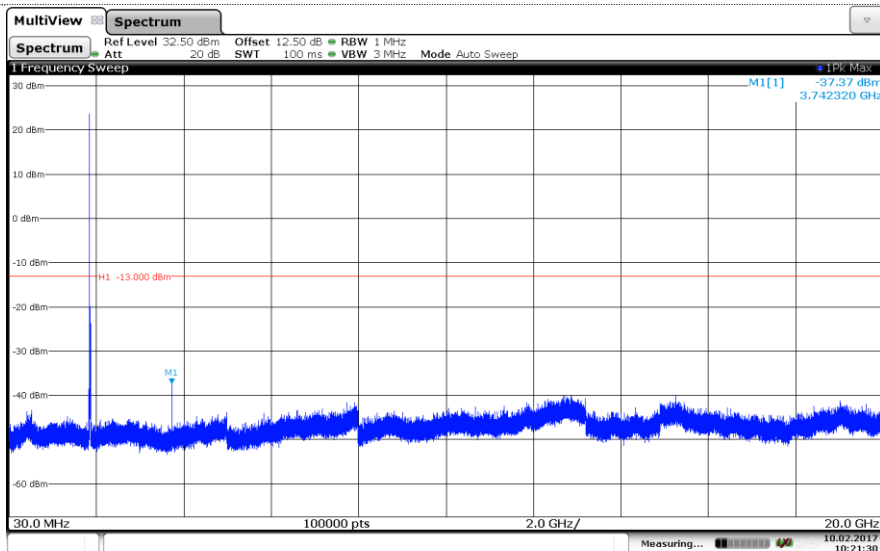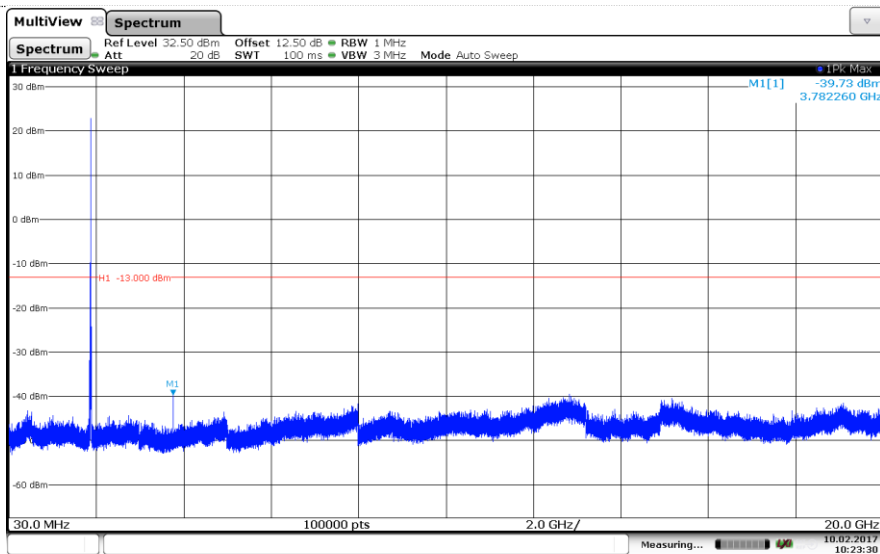
Channel Mid

Channel High

LTE Band 4-1.4MHz
QPSK
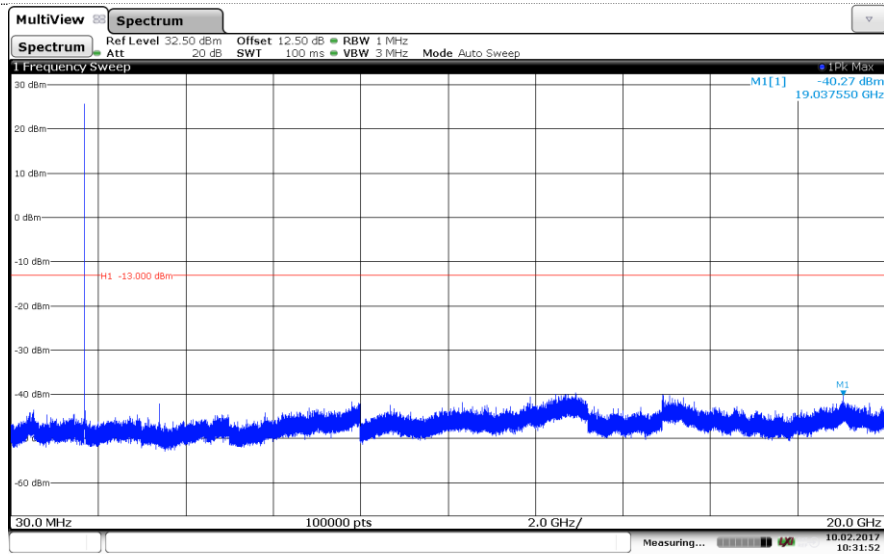
Channel Low
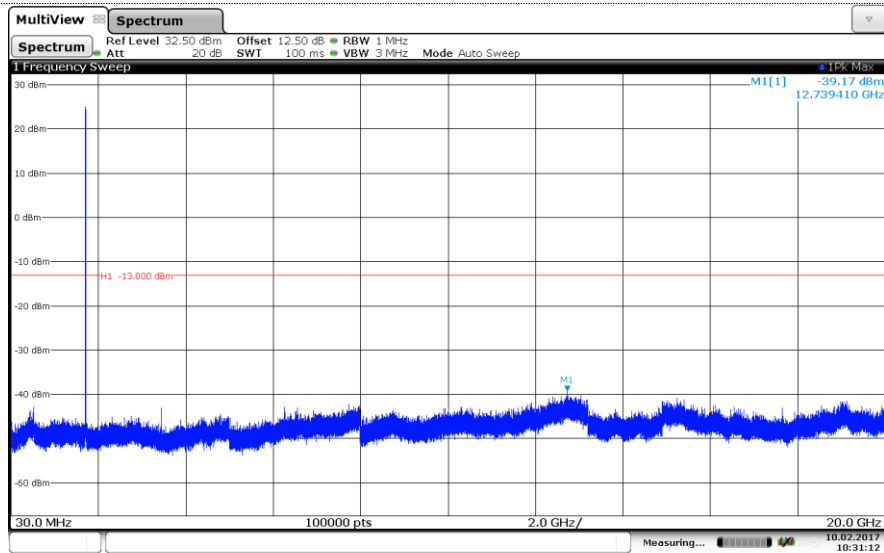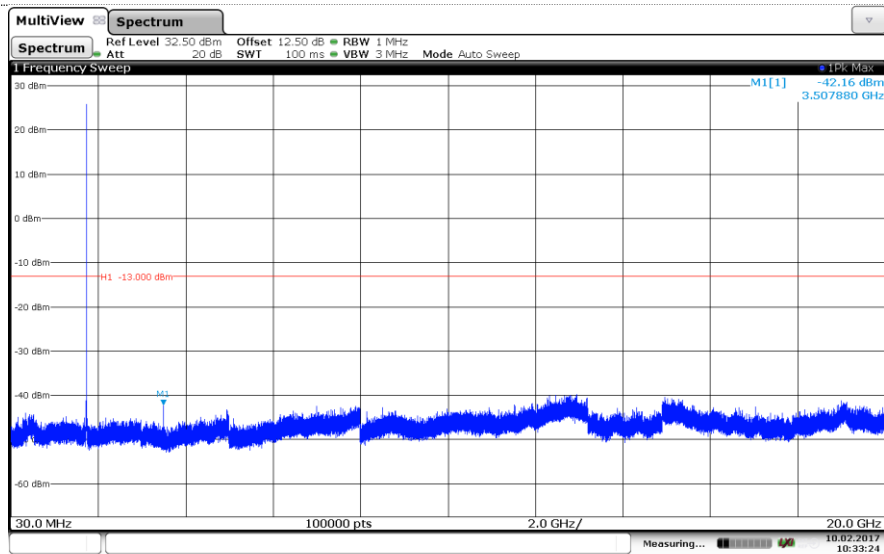
Channel Mid

Channel High

LTE Band 4-1.4MHz
16QAM
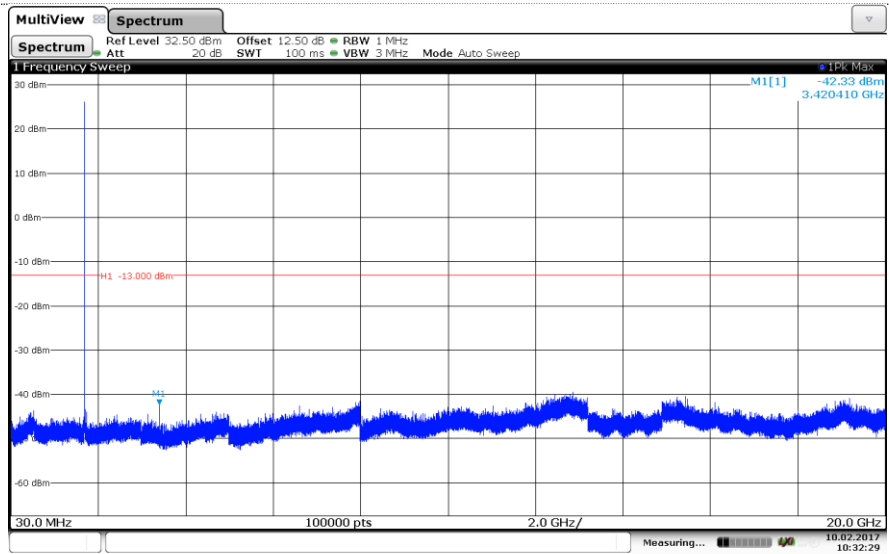
Channel Low
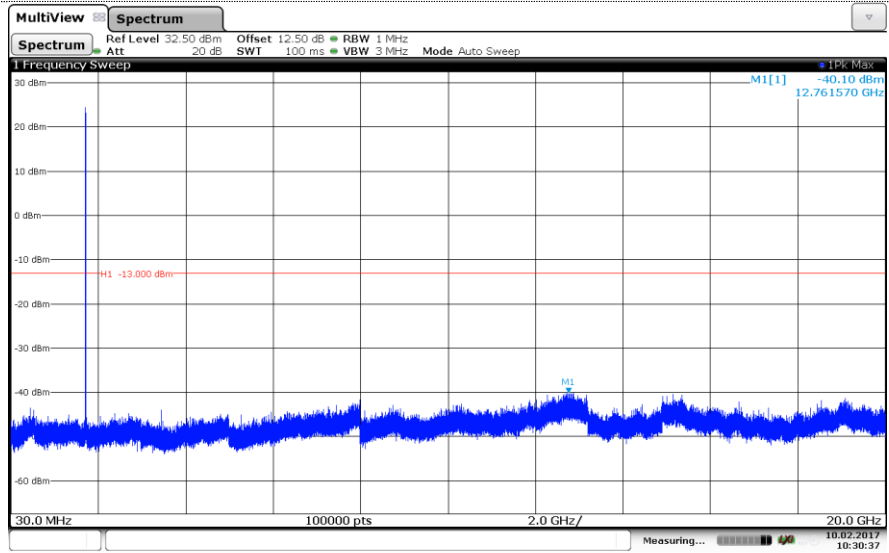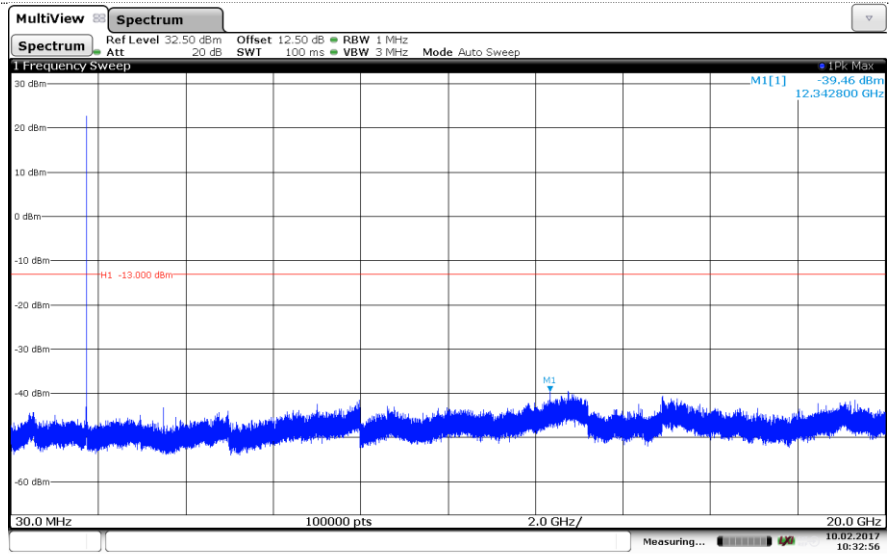
Channel Mid

Channel High

LTE Band 4-3MHz

QPSK
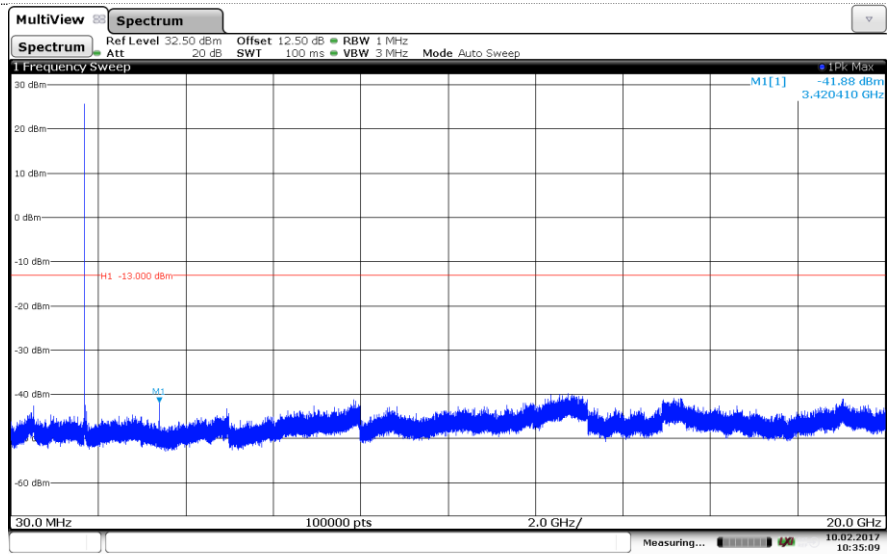
Channel Low
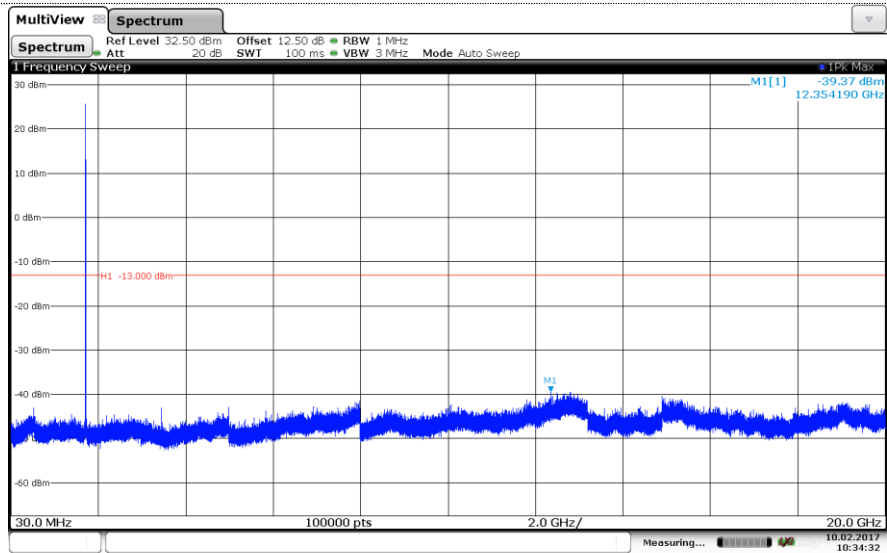
Channel Mid

Channel High

LTE Band 4-3MHz
16QAM
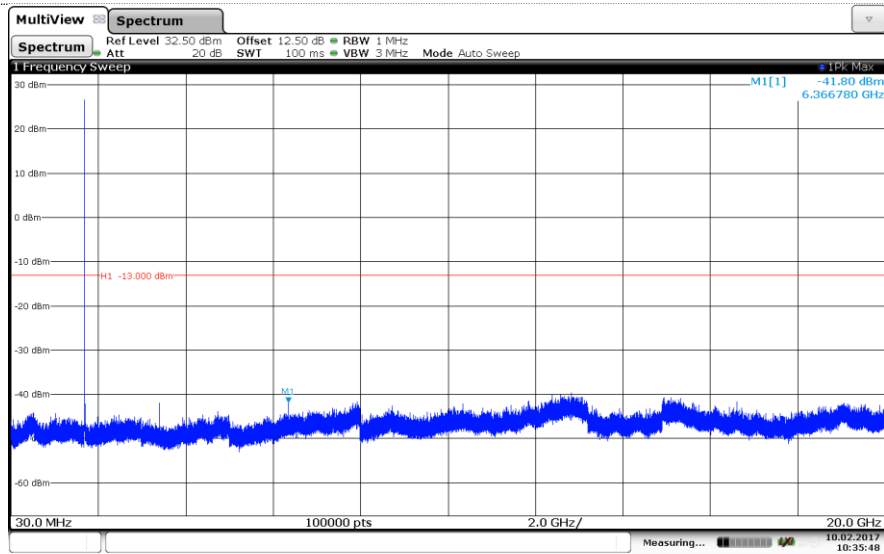
Channel Low
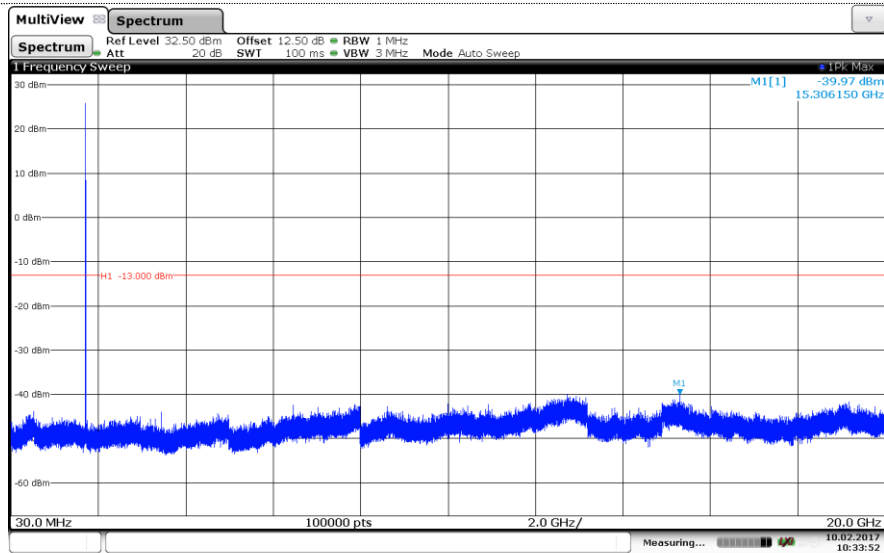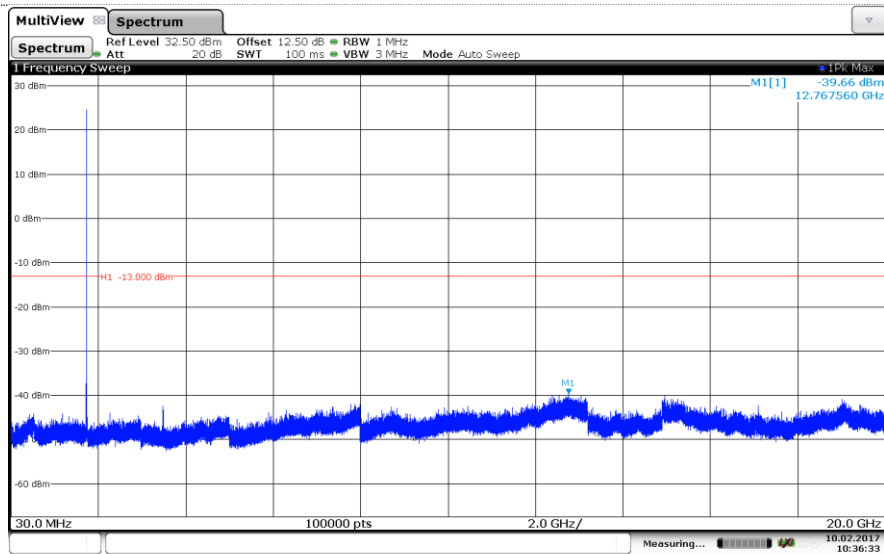
Channel Mid

Channel High

LTE Band 4-5MHz
QPSK
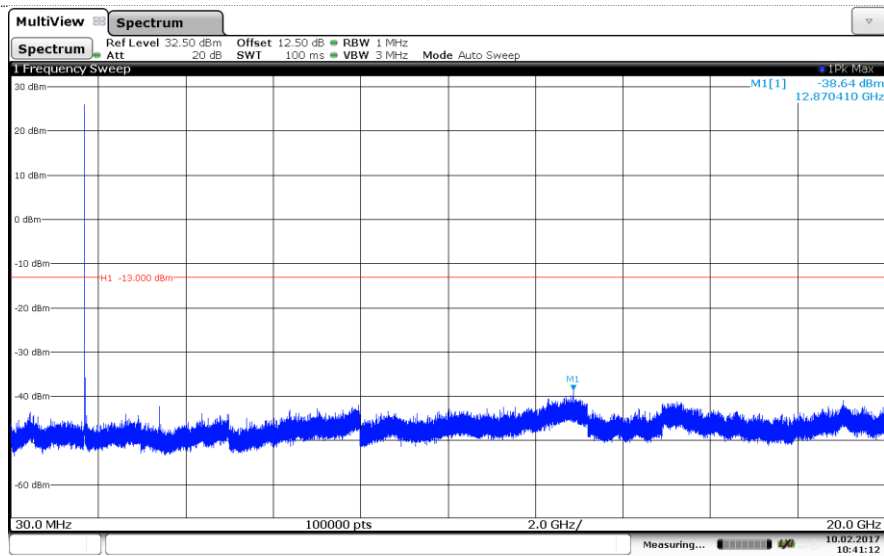
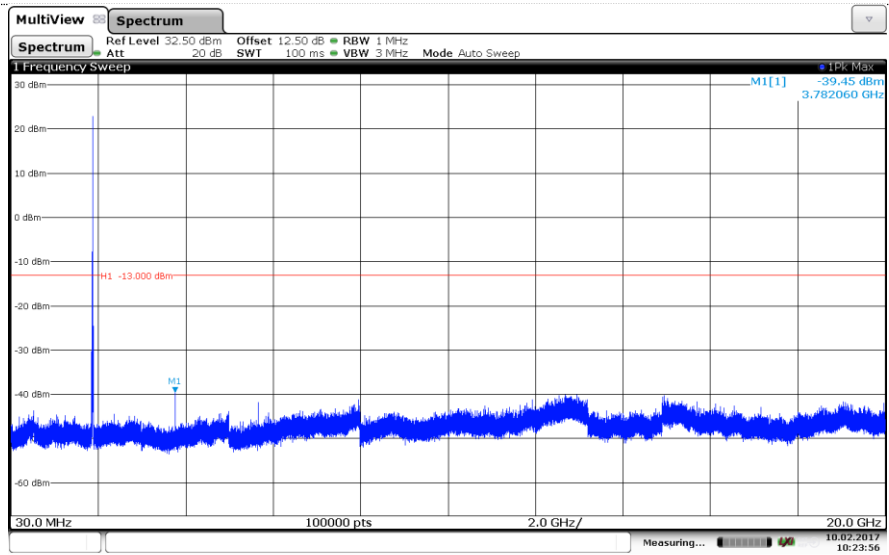

Channel Low
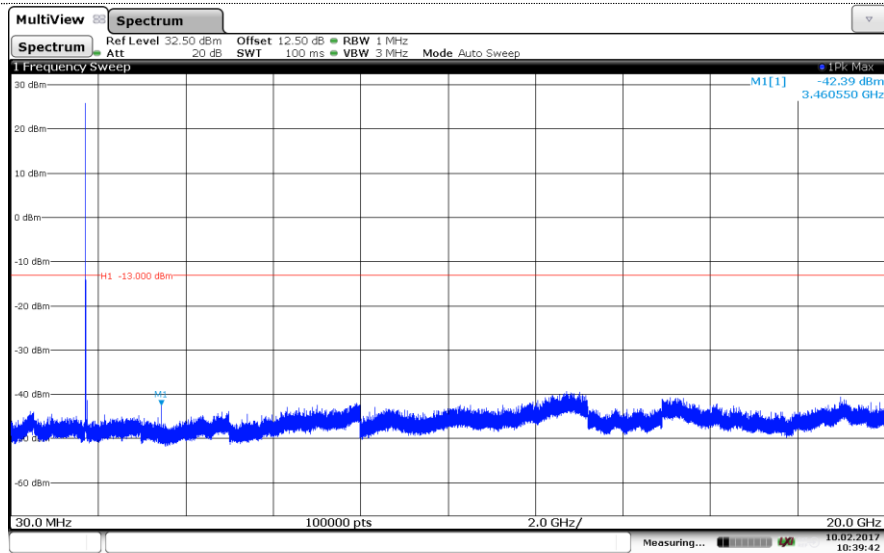
Channel Mid

Channel High

LTE Band 4-5MHz

16QAM
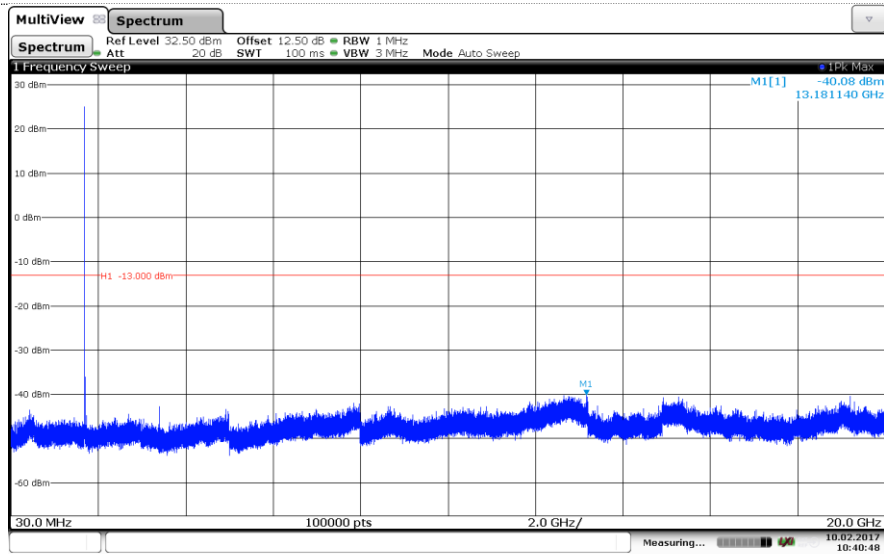
Channel Low
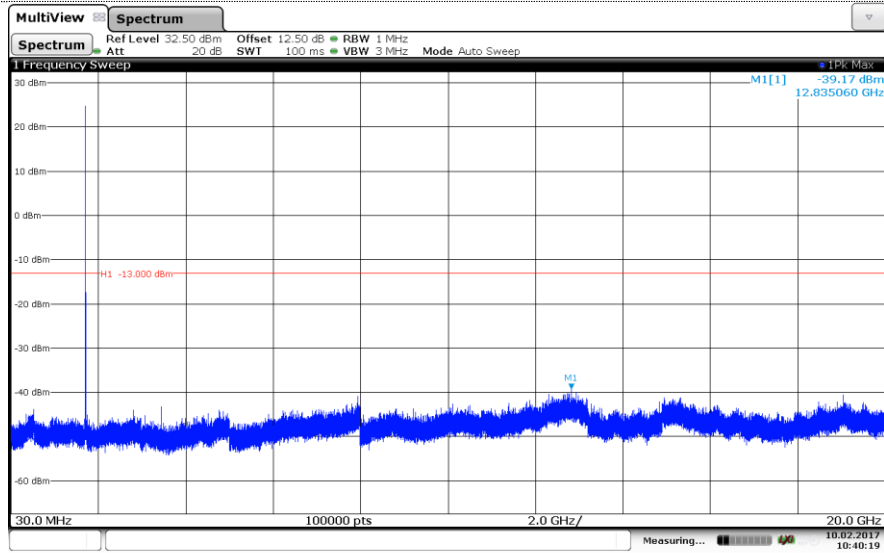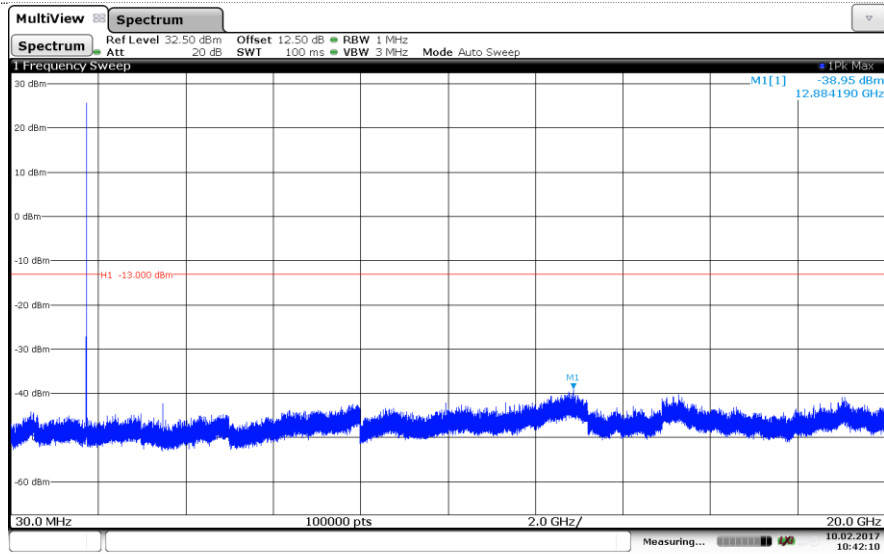
Channel Mid

Channel High

LTE Band 4-10MHz
QPSK
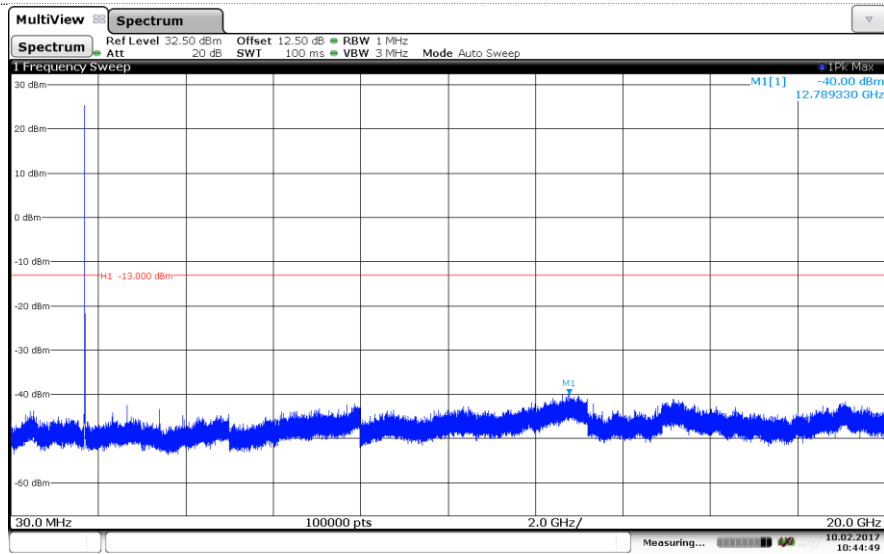
Channel Low
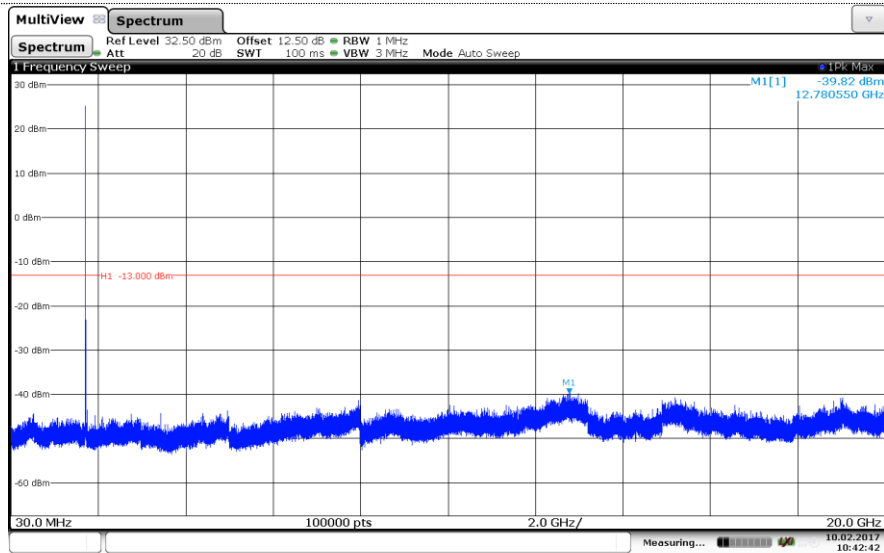
Channel Mid

Channel High

LTE Band 4-10MHz
16QAM
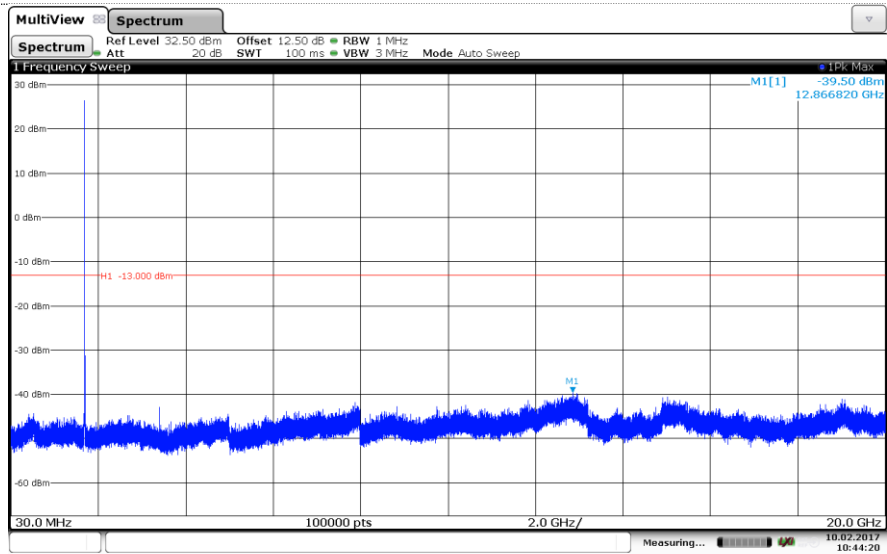
Channel Low
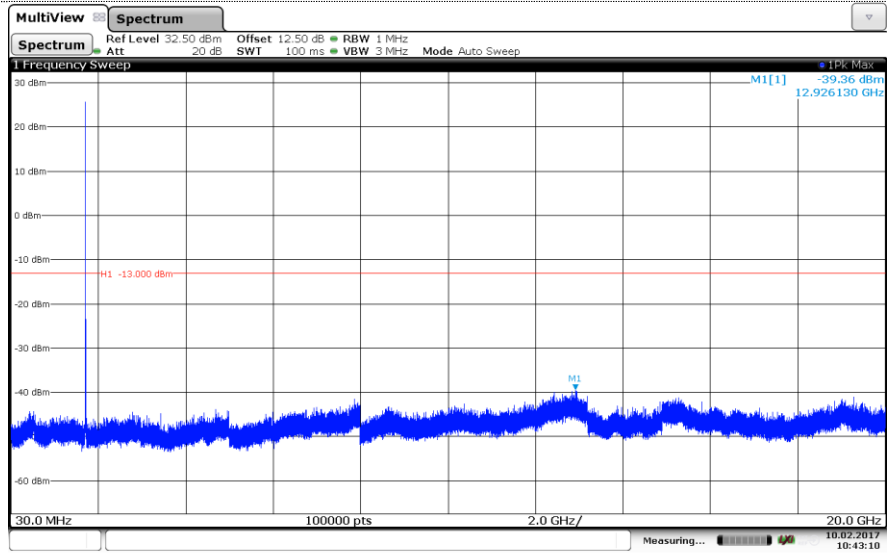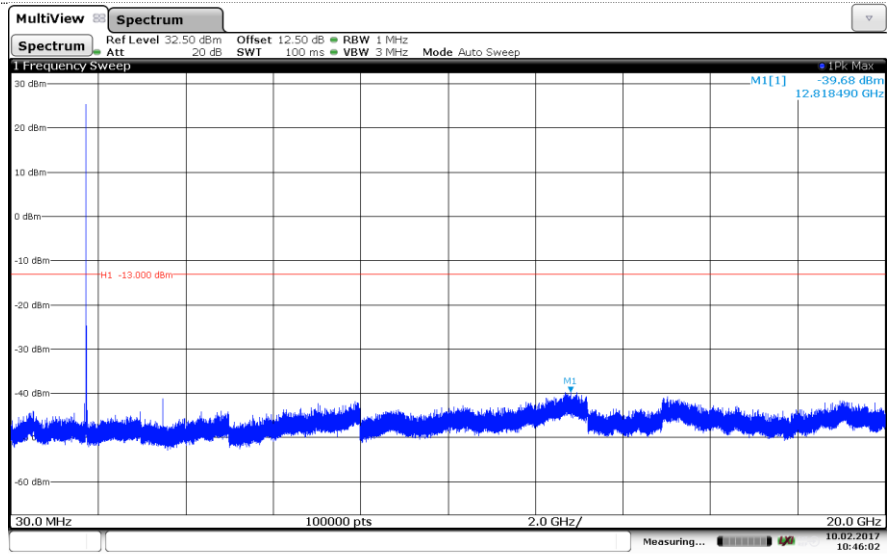
Channel Mid

Channel High

LTE Band 4-15MHz
QPSK
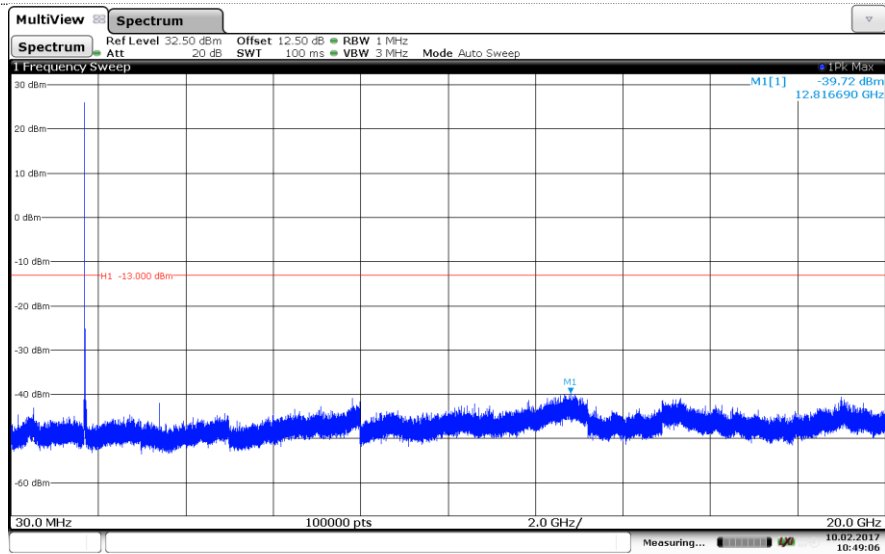
Channel Low
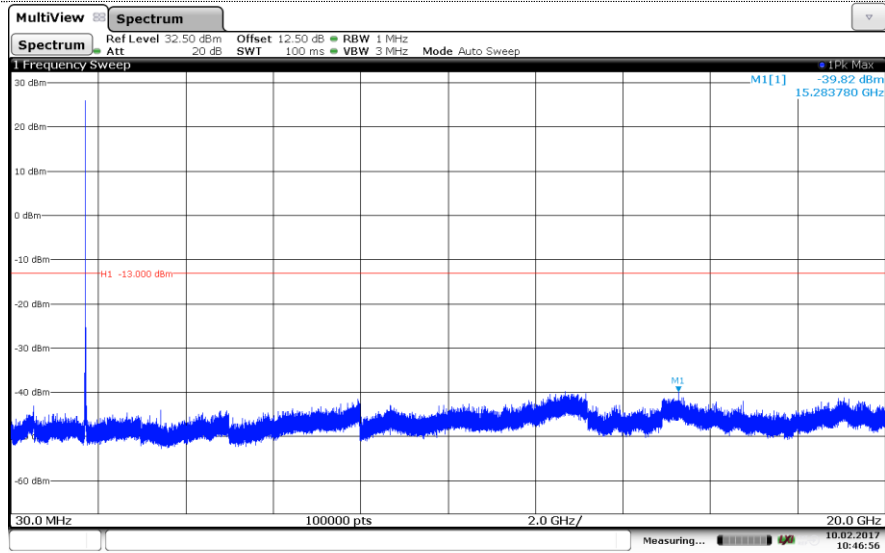
Channel Mid

Channel High

LTE Band 4-15MHz
16QAM
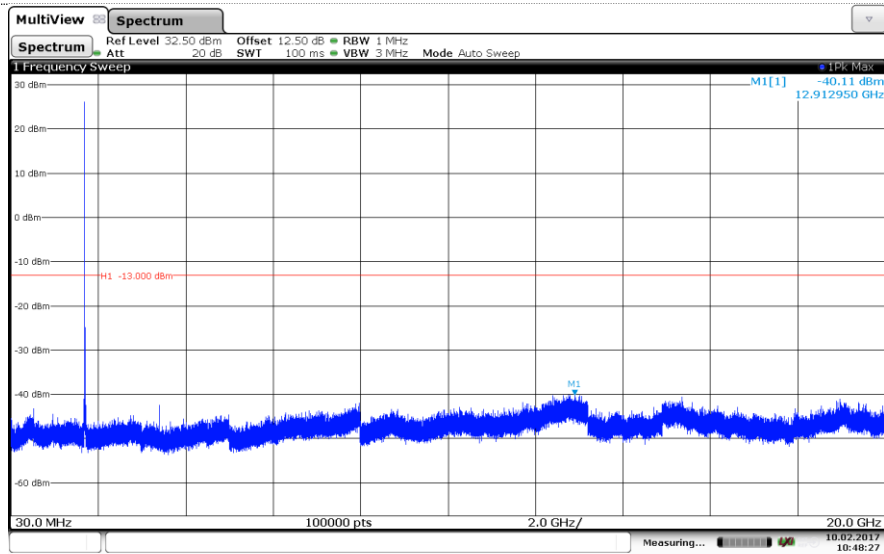
Channel Low
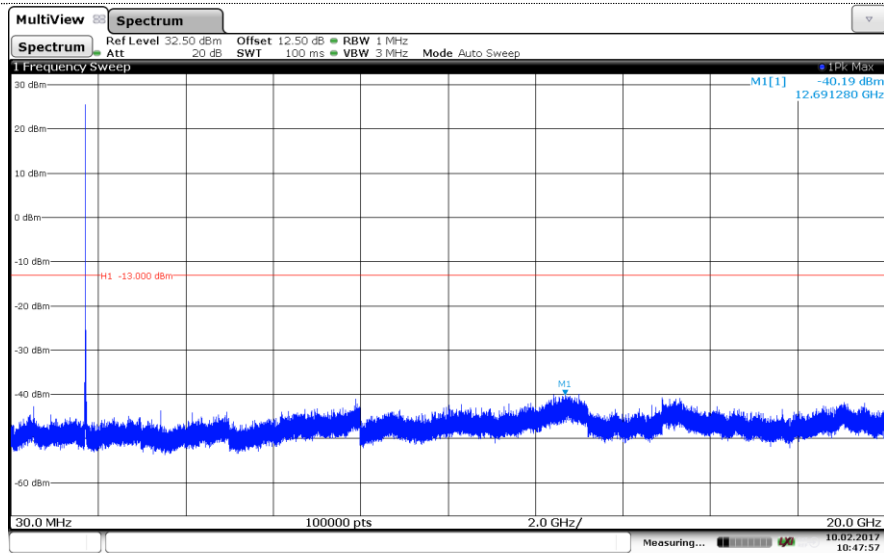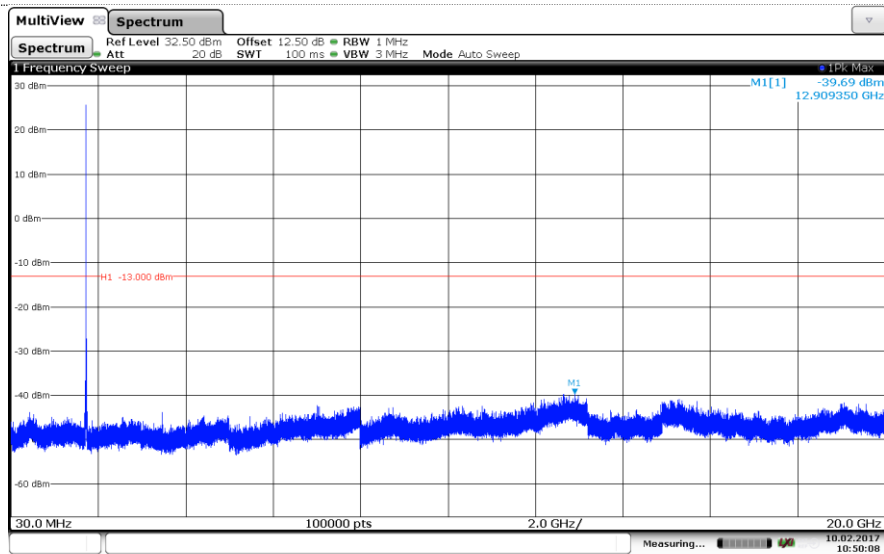
Channel Mid
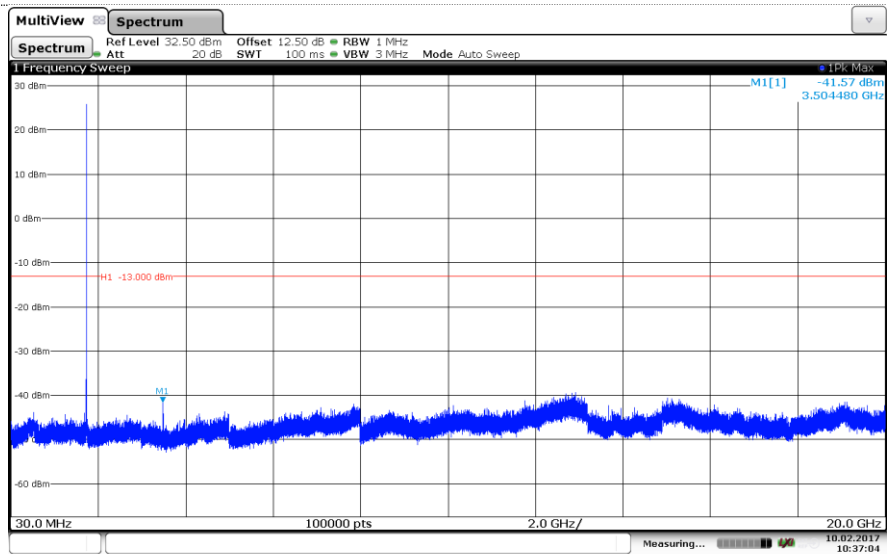

Channel High

LTE Band 4-20MHz
QPSK
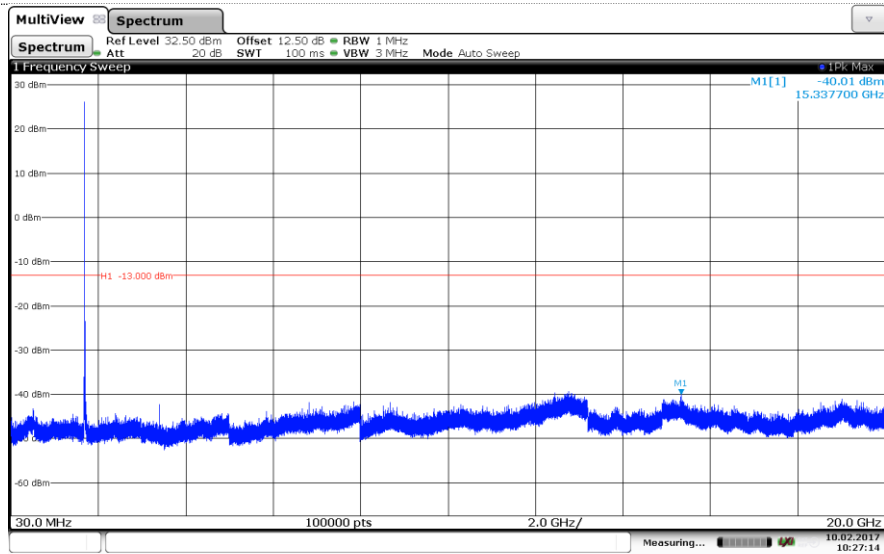
Channel Low
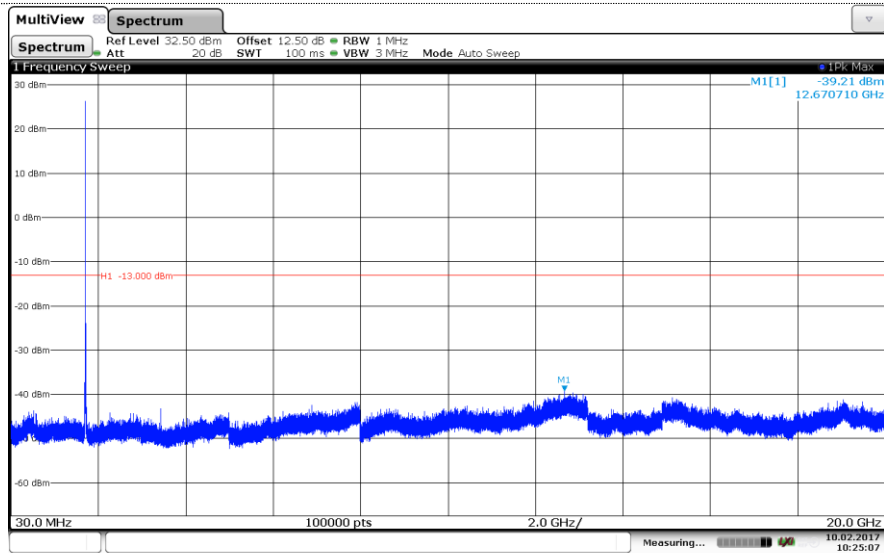
Channel Mid

Channel High

LTE Band 4-20MHz
16QAM
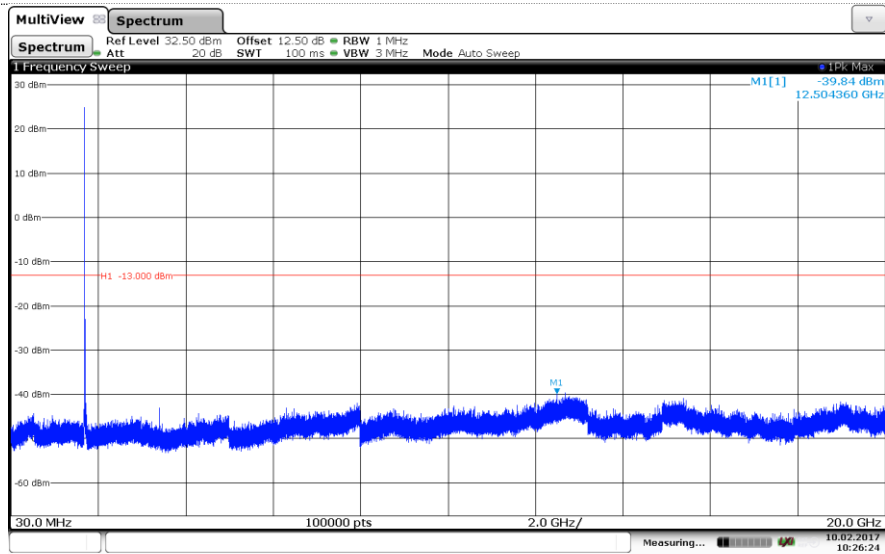
Channel Low
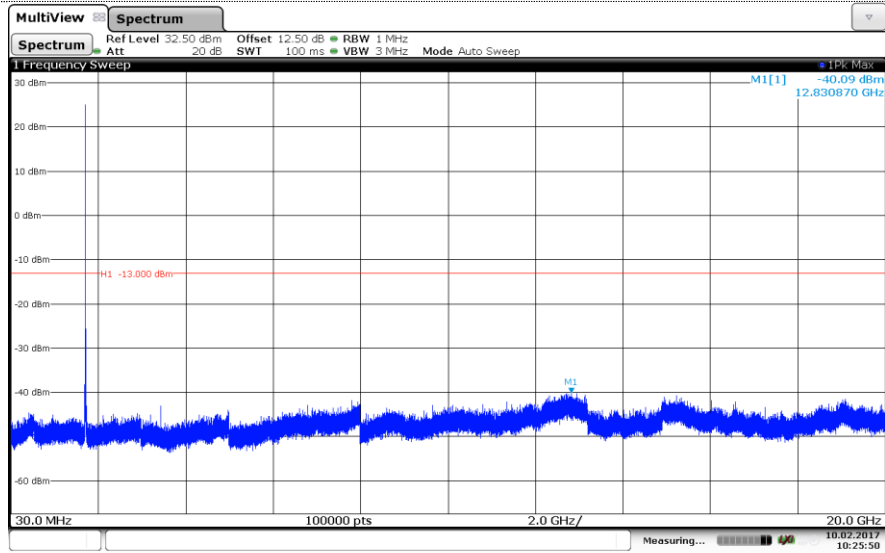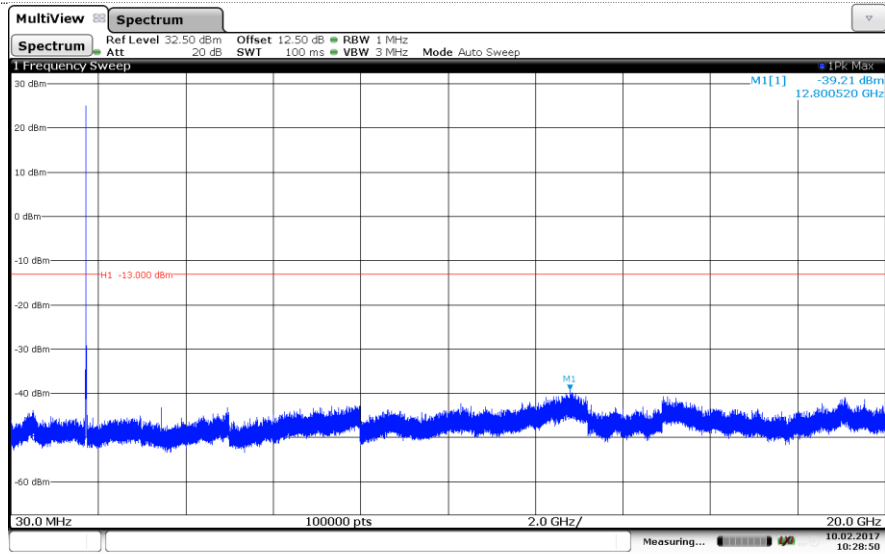
Channel Mid

Channel High

LTE Band 7-5MHz

QPSK
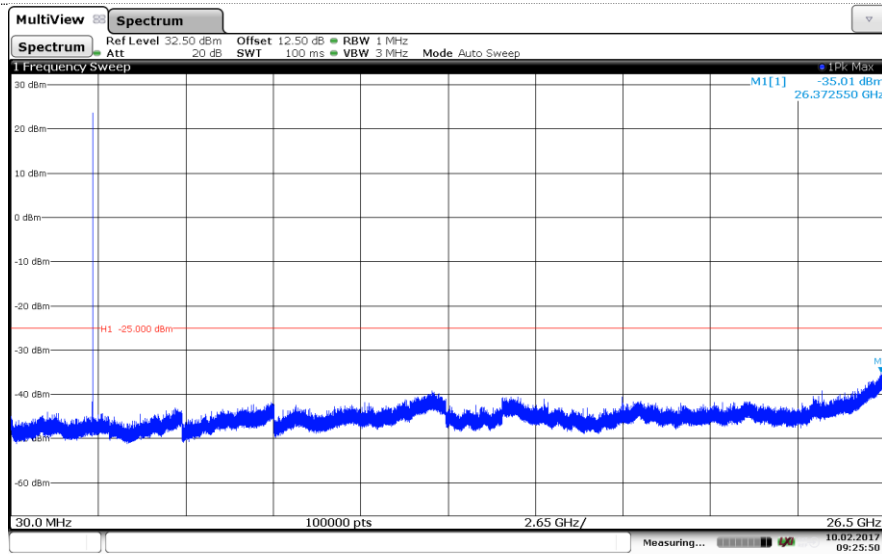
Channel Low
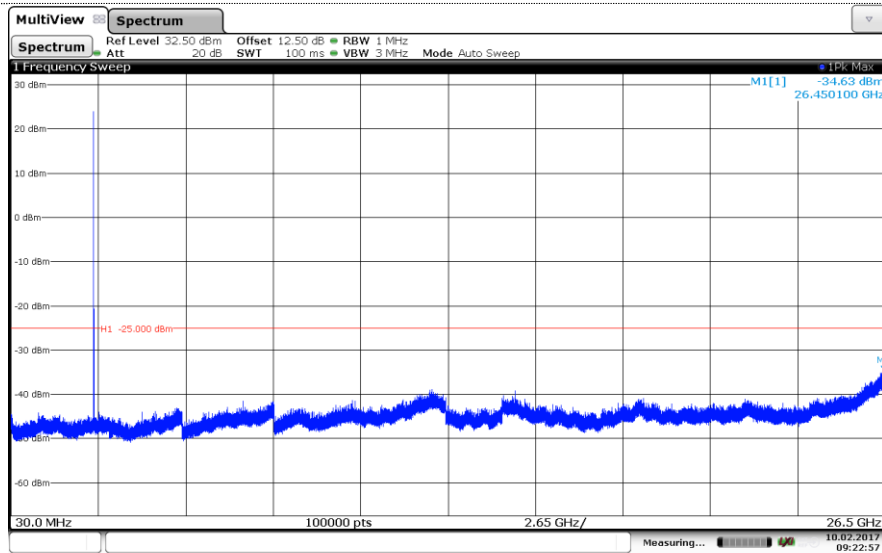
Channel Mid

Channel High

LTE Band 7-5MHz

16QAM
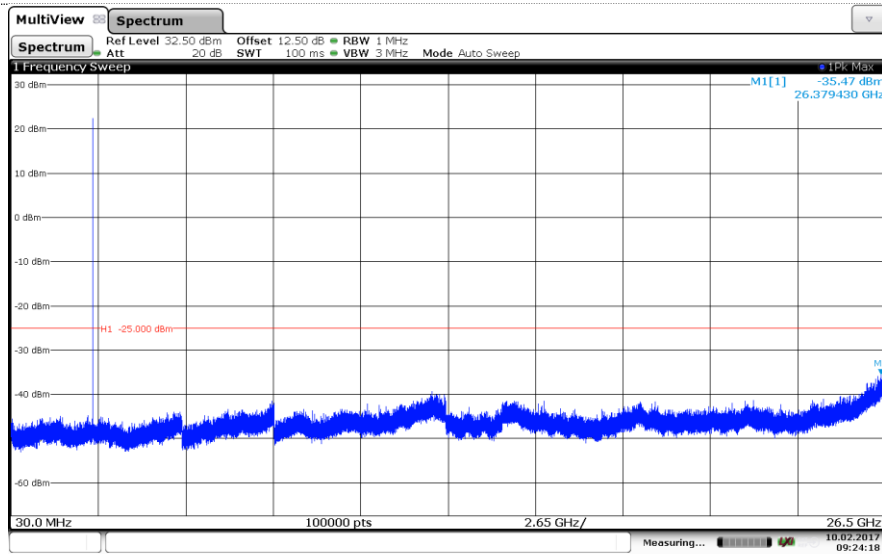
Channel Low
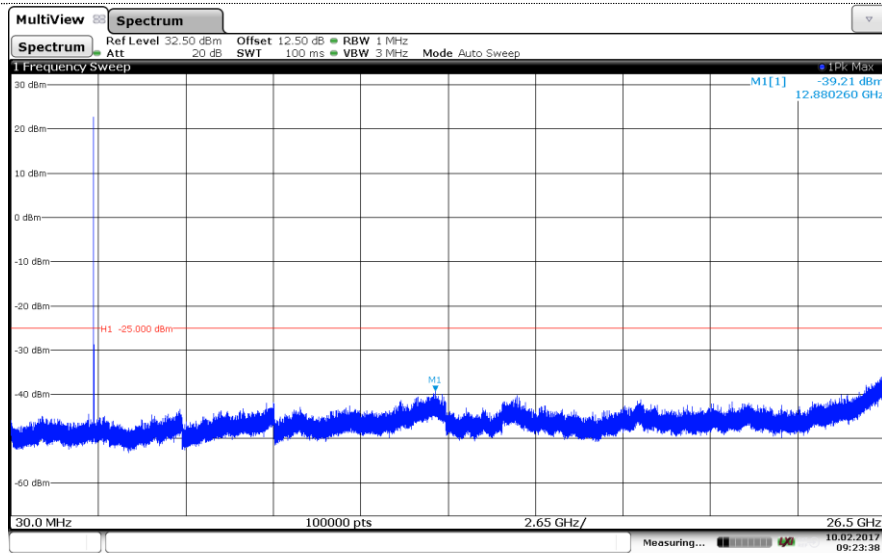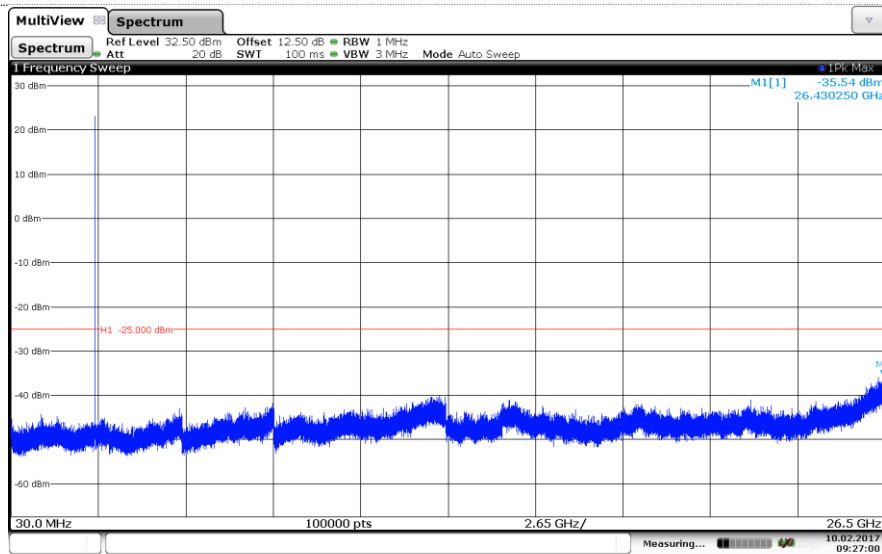
Channel Mid

Channel High

LTE Band 7-10MHz

QPSK
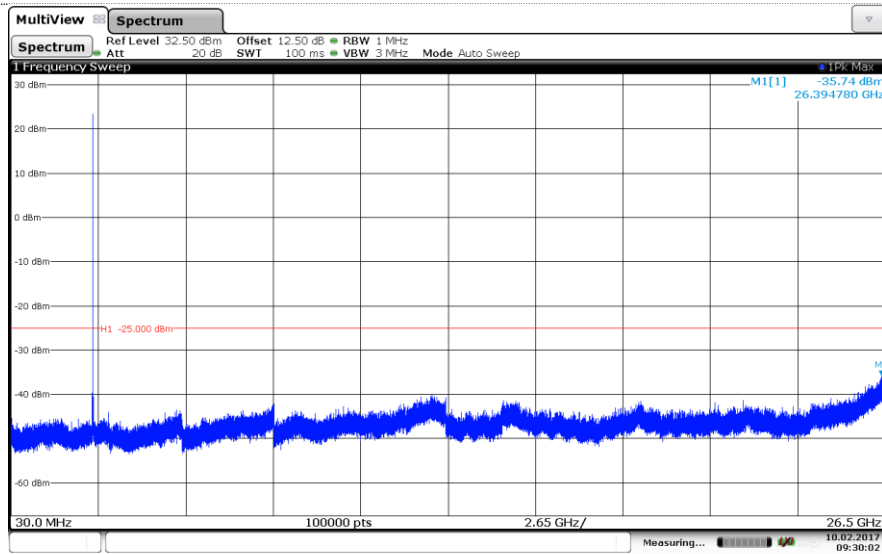
Channel Low
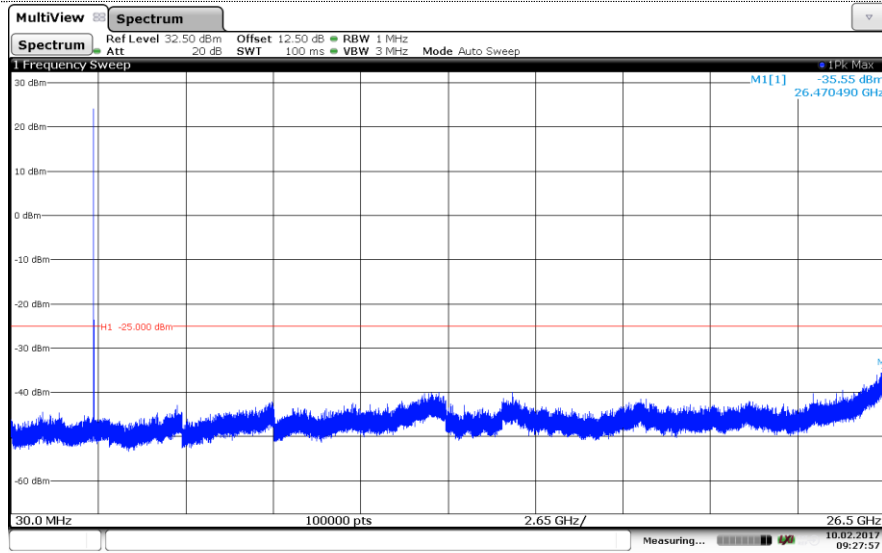
Channel Mid

Channel High

LTE Band 7-10MHz
16QAM
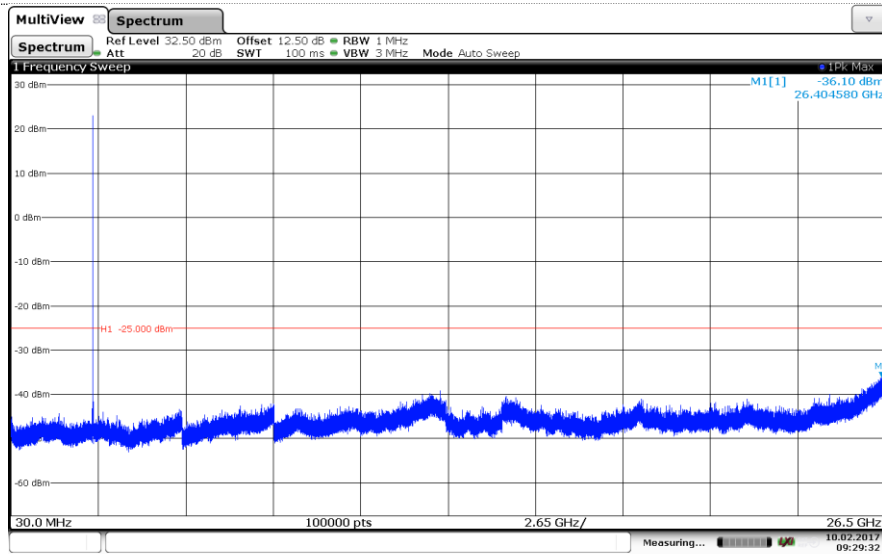
Channel Low
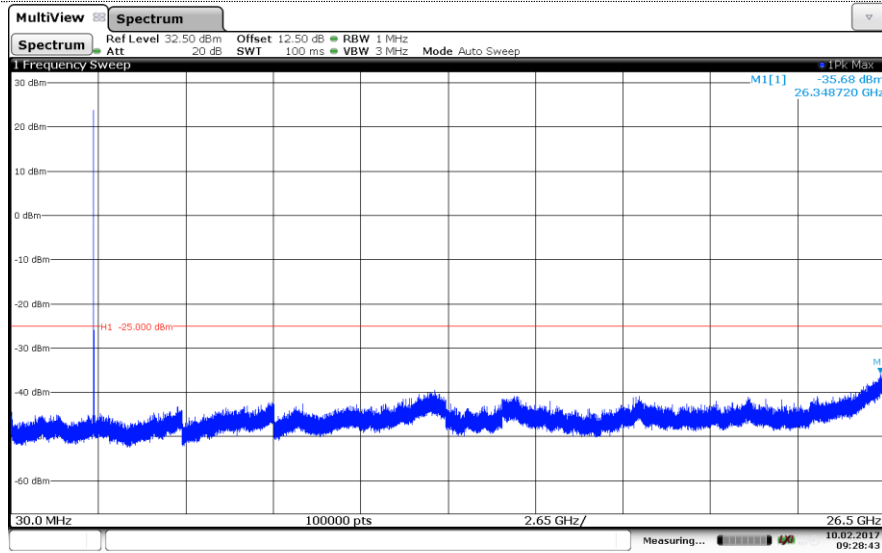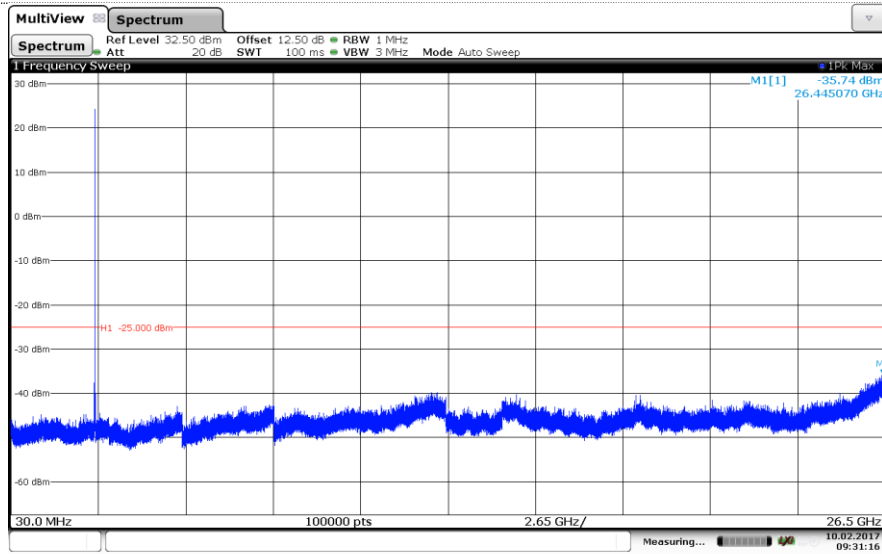
Channel Mid

Channel High

LTE Band 7-15MHz

QPSK
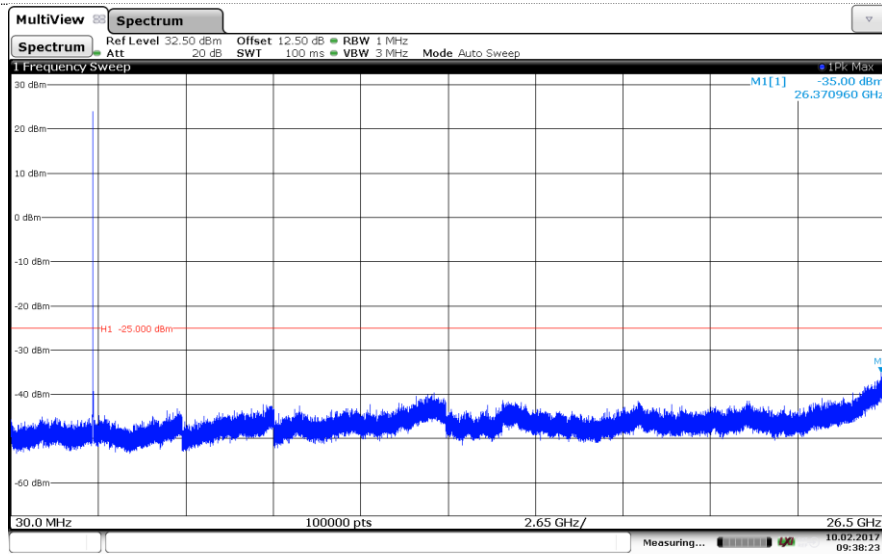
Channel Low
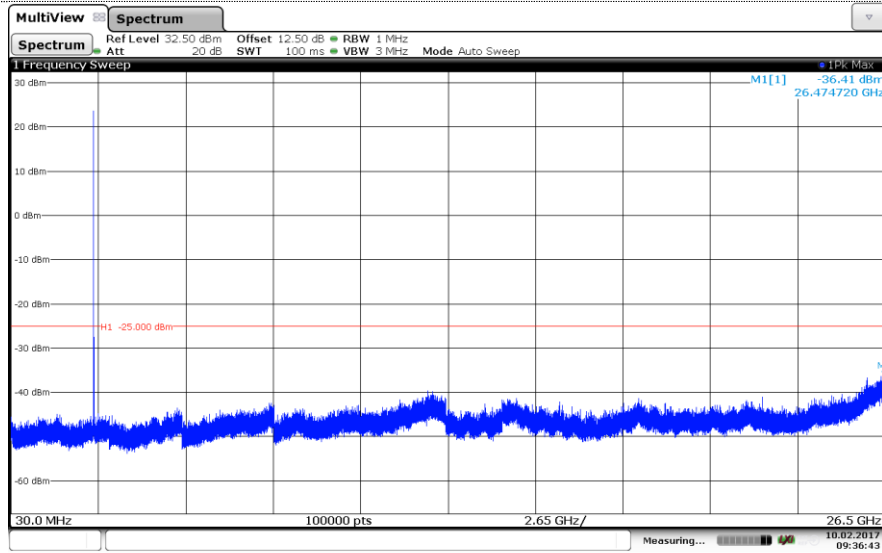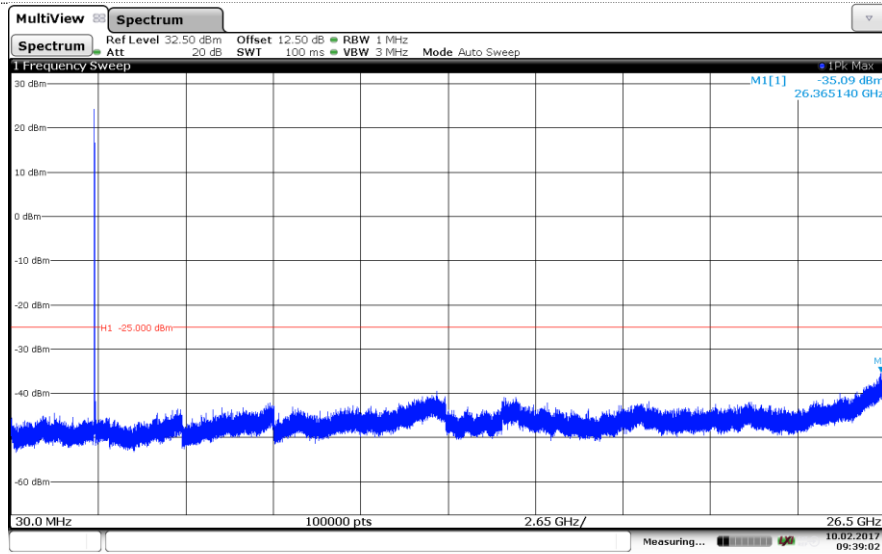
Channel Mid

Channel High

LTE Band 7-15MHz

16QAM
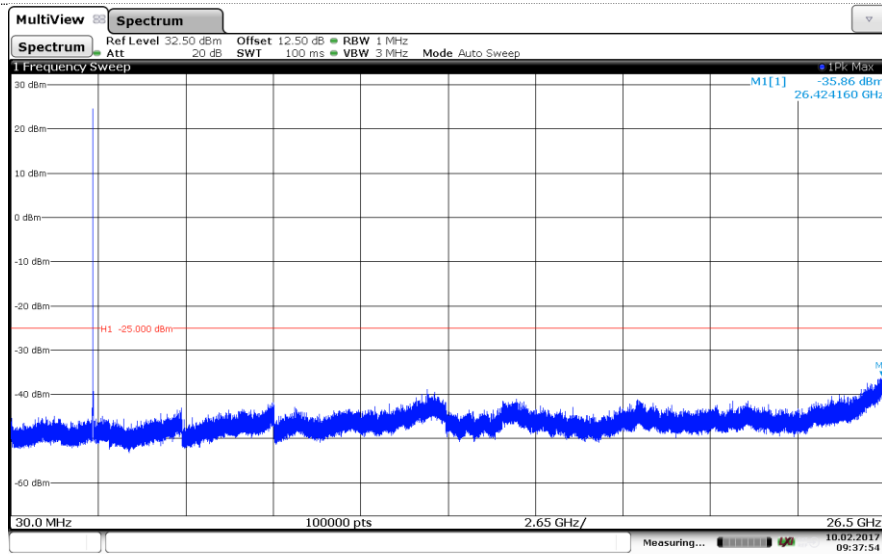
Channel Low
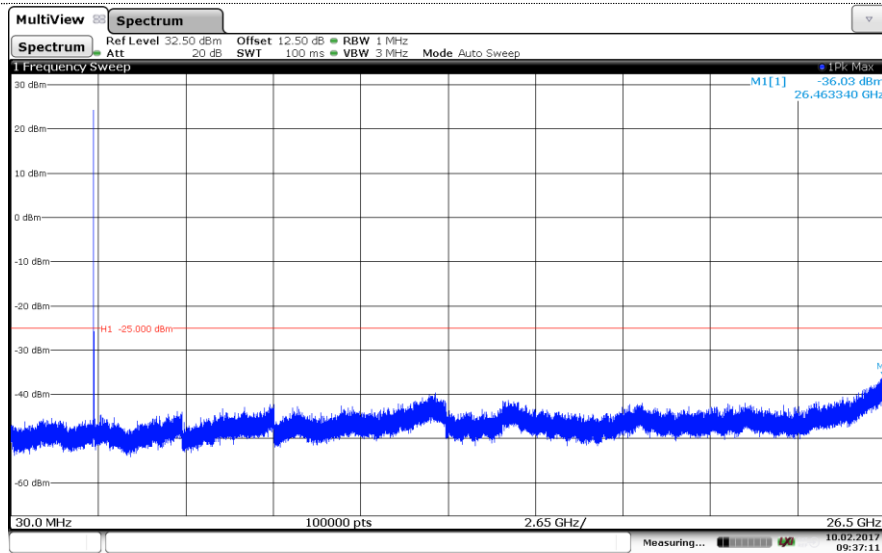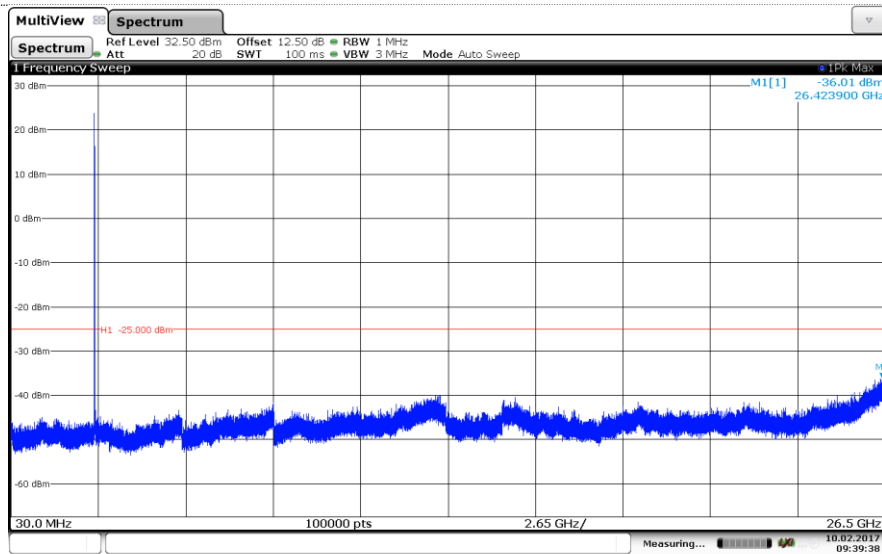
Channel Mid
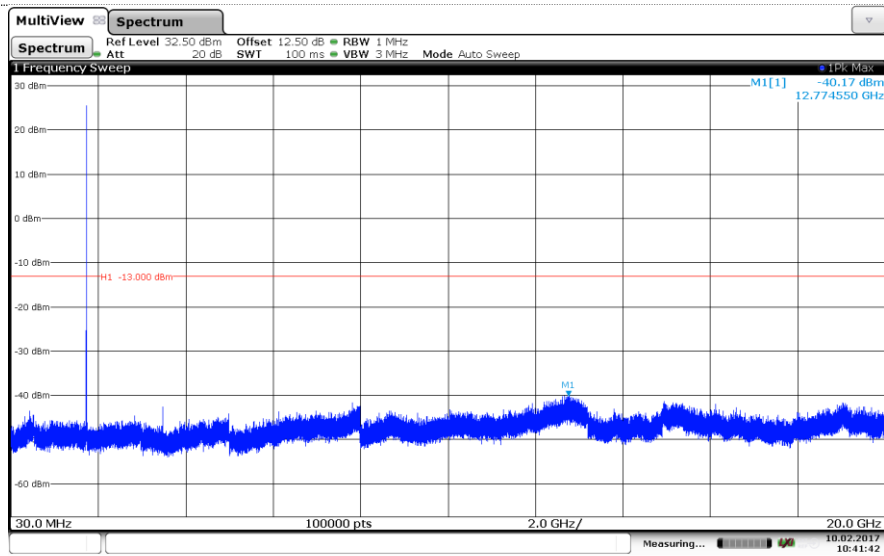

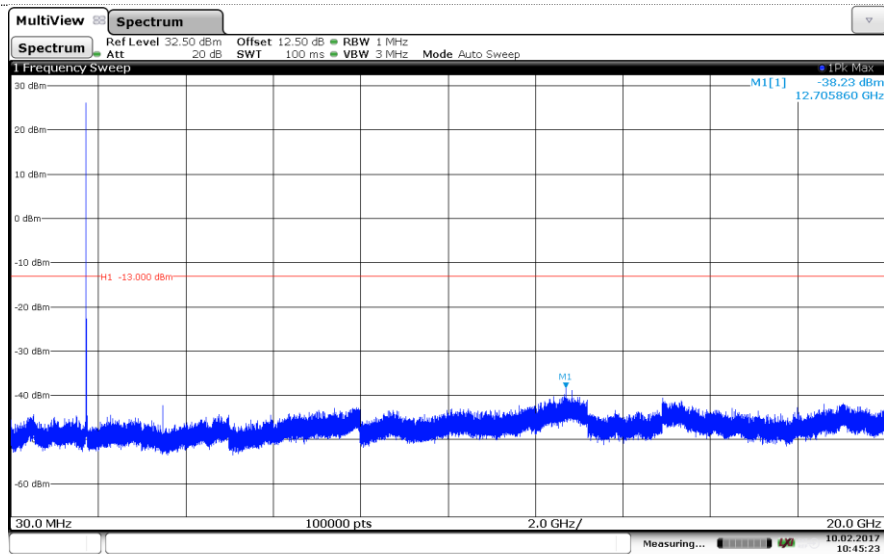*Channel High*

LTE Band 7-20MHz

QPSK
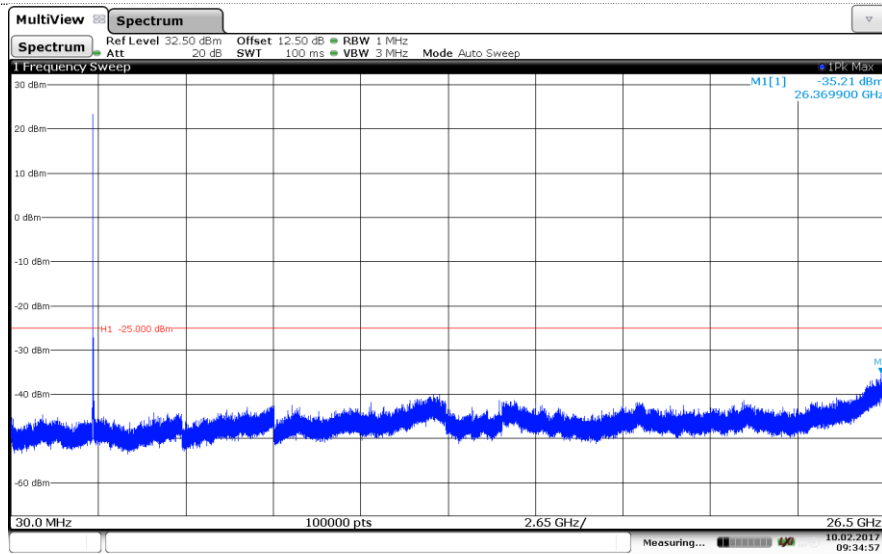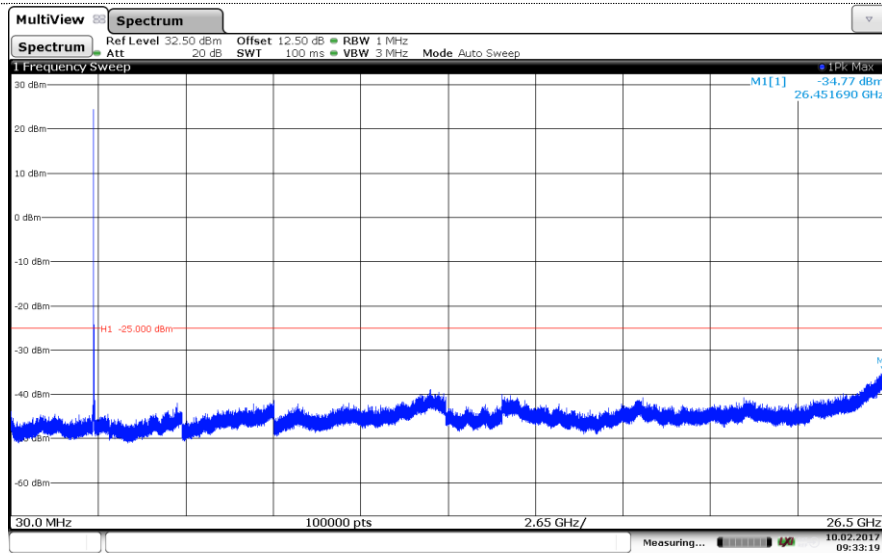
Channel Low
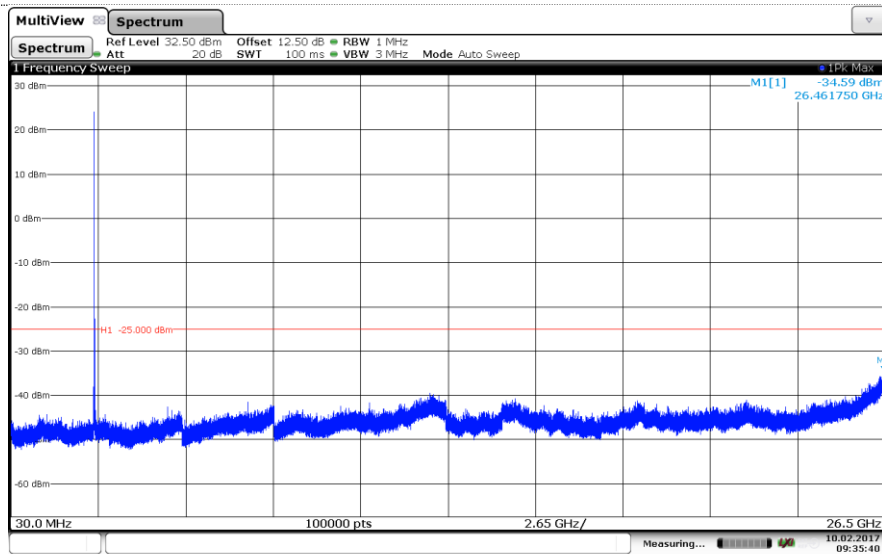
Channel Mid

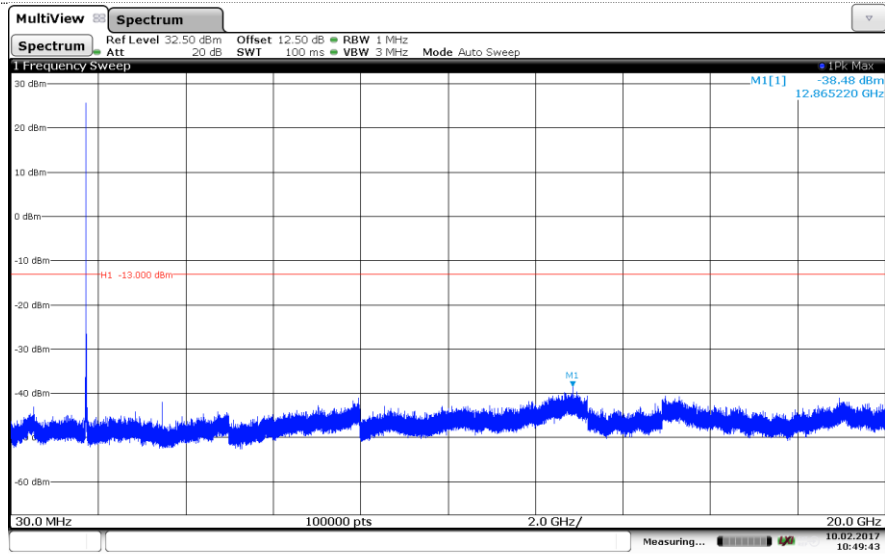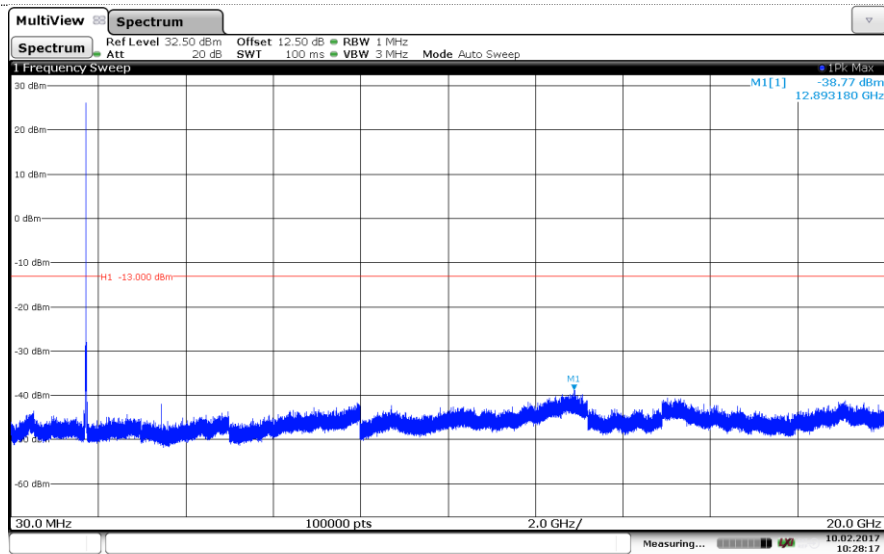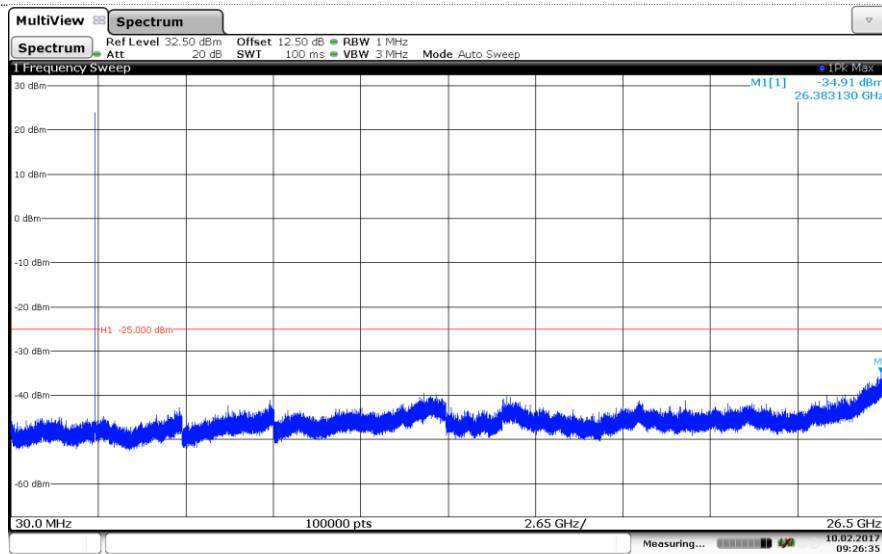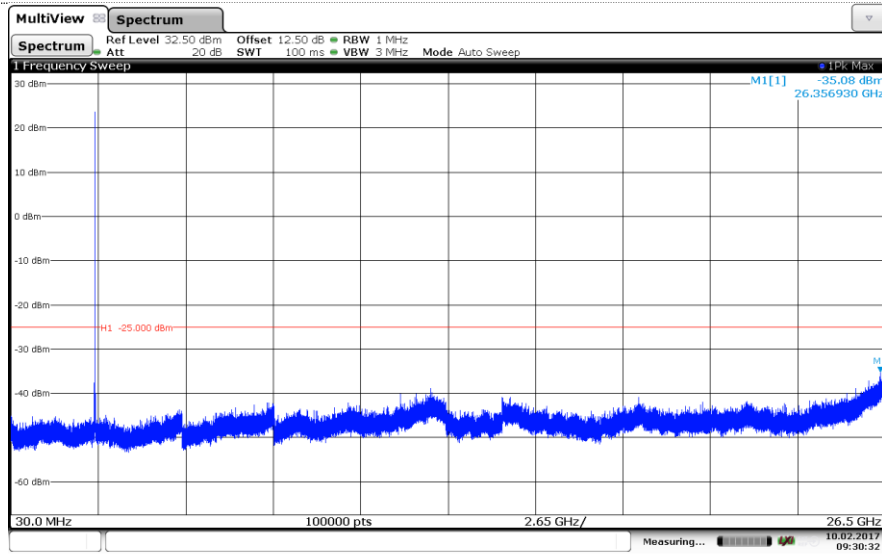*Channel High*

LTE Band 7-20MHz
16QAM
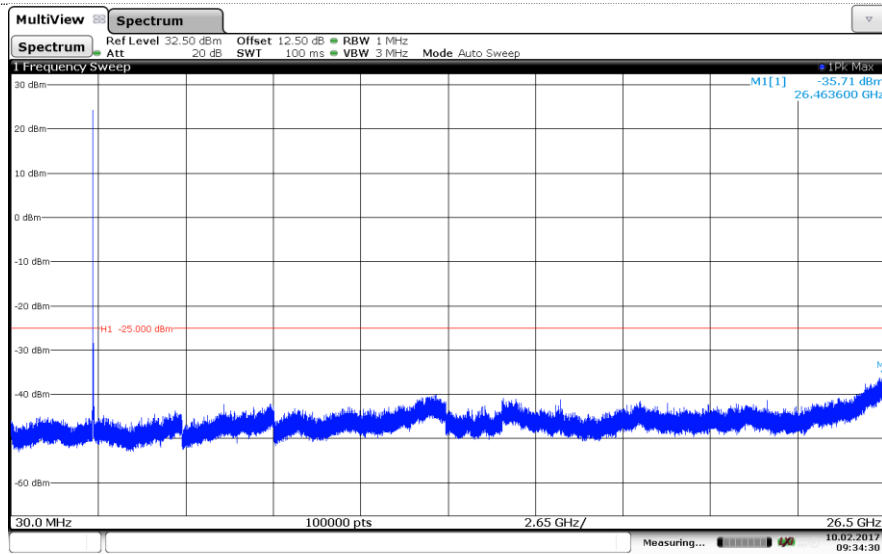
Channel Low
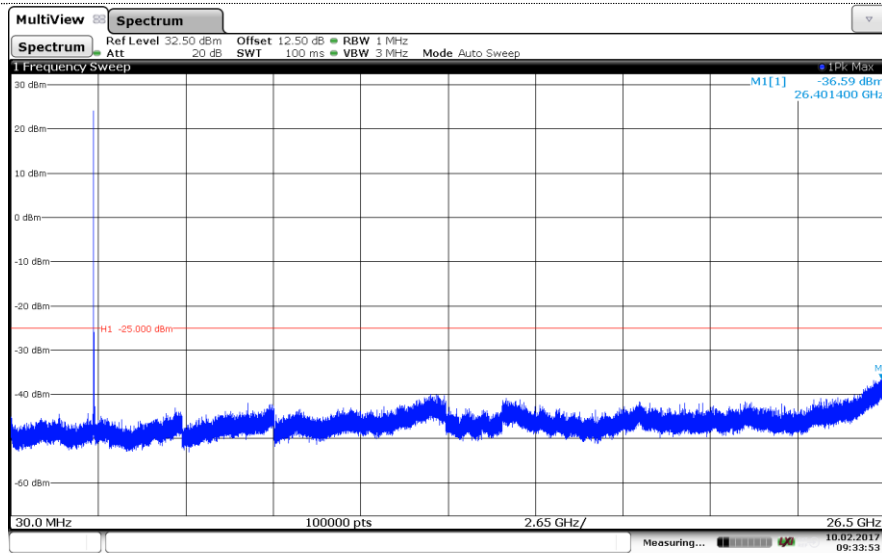
Channel Mid
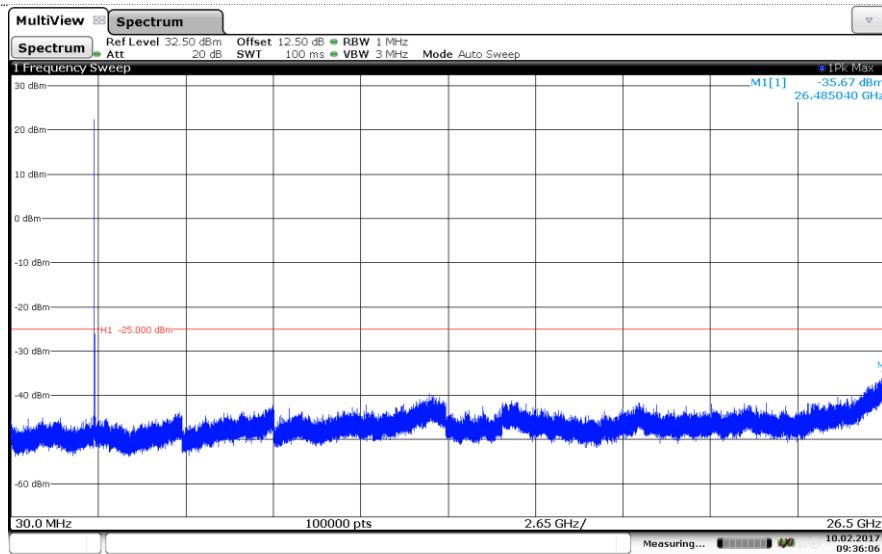
Channel High

5.4. Band Edge

LIMIT

Part 24.238 and Part 27.53h(1) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

LTE Band 7

Part 27.53 m(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

TEST CONFIGURATION
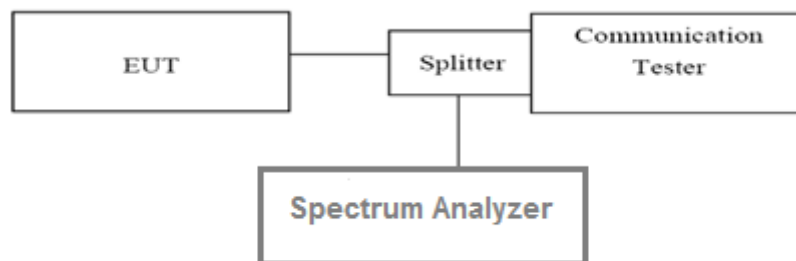
TEST PROCEDURE

1. The RF output of the transceiver was connected to a spectrum analyzer through appropriateattenuation.

2. The band edges of low and high channels for the highest RF powers were measured. Set RBW>= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

3. Set spectrum analyzer with RMS detector.

TEST MODE:
Please refer to the clause 3.3

TEST RESULTS

☒ **Passed**   ☐ **Not Applicable**

LTE Band 2-1.4MHz-QPSK

MultiView ⊞ **Spectrum**

Ref Level 32.50 dBm   Offset   12.50 dB ● RBW   30 kHz
● Att   20 dB   SWT   140 µs (~7.2 ms) ● VBW   100 kHz   Mode Auto FFT   Count 100/100

1 Frequency Sweep   ● 1Sa Avg
                                                                                          M1[1]   -27.45 dBm
                                                                                                   1.85000000 GHz

H1 -13.000 dBm

CF 1.85 GHz   1001 pts   200.0 kHz/   Span 2.0 MHz

Measuring…   13.02.2017
                                                                                            09:20:21

Channel Low-1RB#

MultiView ⊞ **Spectrum**

Ref Level 32.50 dBm   Offset   12.50 dB ● RBW   30 kHz
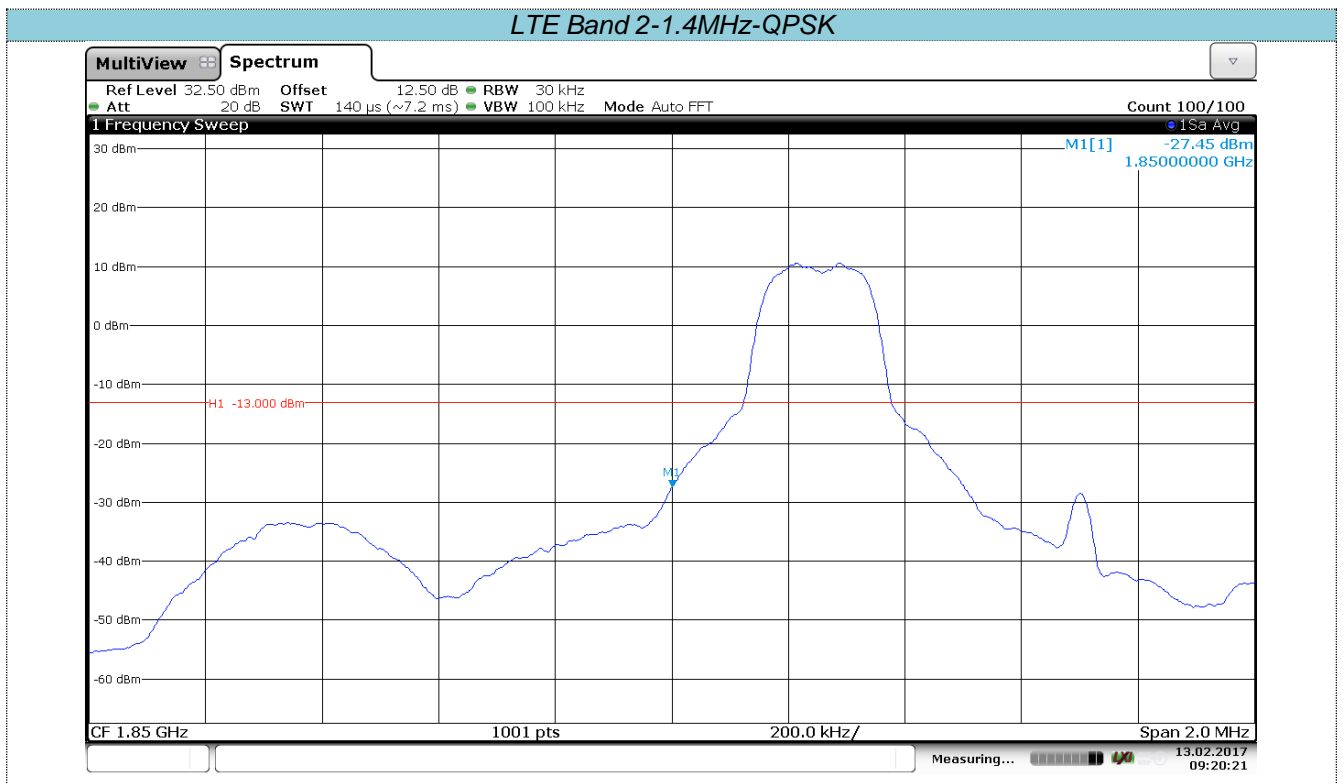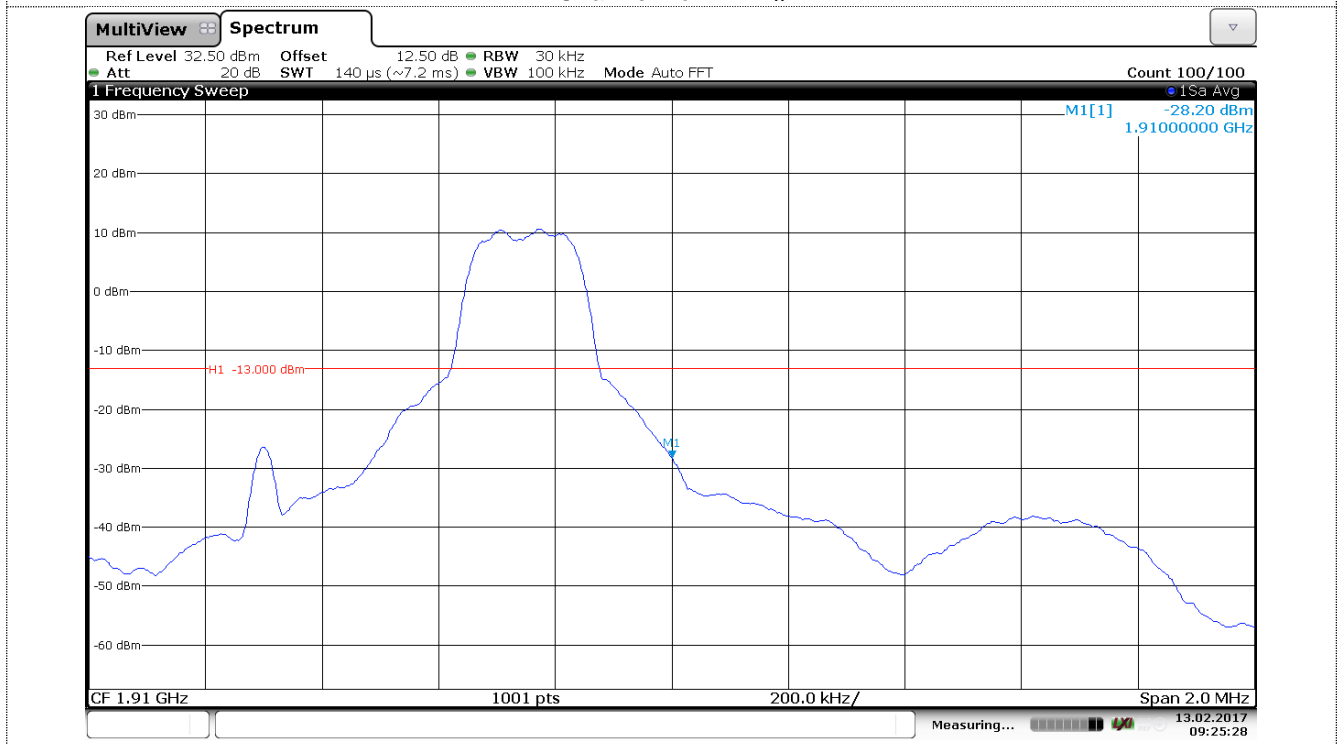● Att   20 dB   SWT   140 µs (~7.2 ms) ● VBW   100 kHz   Mode Auto FFT   Count 100/100

1 Frequency Sweep   ● 1Sa Avg
                                                                                          M1[1]   -28.20 dBm
                                                                                                   1.91000000 GHz

H1 -13.000 dBm

CF 1.91 GHz   1001 pts   200.0 kHz/   Span 2.0 MHz

Measuring…   13.02.2017
                                                                                            09:25:28

Channel High-1RB#