129 Samsung-ro,
Yeongtong-gu, Suwon-Si,
Gyeonggi-Do, 16677
Korea
Tel: 82-31-8062-4341
Fax: 82-31-279-9985

FCC TEST REPORT

Manufacturer: SAMSUNG Electronics Co., Ltd.

Model: SM-J530K/S/L

FCC ID: A3LSMJ530

Application Type: Certification

EUT Type: Portable Handset

All measurements reported here are in accordance with FCC Rules,
47CFR Part2 and Part27.

Prepared By ..... Date 2017.05.12
DH Ju
Test Engineer

Checked and Authorized By ..... Date 2017.05.15
YG Choi
Technical Manager

Revision History

Rev. #	Issue Date	Revisions	Revised By
1	2017.05.15	▪ Initial issue	DH Ju

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§2.1033 General Information

APPLICANT:	Samsung Electronics Co., Ltd.
APPLICANT ADDRESS:	129 Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
TEST SITE:	SAMSUNG Electronics QA Laboratory
TEST SITE ADDRESS:	129 Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
FCC RULE PART(S):	§2, §27
TEST PROCEDURE(S):	ANSI/TIA603-D-2010, KDB971168 v02r02
BASE MODEL:	SM-J530K
MULTI MODEL:	SM-J530S, SM-J530L
FCC ID:	A3LSMJ530
FCC CLASSIFICATION:	PCS Licensed Transmitter Held to Ear (PCE)
MODE:	LTE
EMISSION DESIGNATOR:	See Table 0-1
TX FREQUENCY BLOCK	704 – 716 MHz (LTE Band 17) 2496 – 2690MHz (LTE Band 41)
RX FREQUENCY BLOCK	734 – 746MHz (LTE Band 17) 2496 – 2690MHz (LTE Band 41)
MAX POWER RATING:	0.114 W ERP LTE Band 17 (20.55 dBm) 0.530 W EIRP LTE Band 41 (27.24 dBm)
TEST DEVICE SERIAL NO.:	FCO-001-A , FCO-001-B
DATE(S) OF TEST:	March 29 – May 11 , 2017

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
				Max. Power (Watt)	Max. Power (dBm)
LTE Band 17	706.5 – 713.5	4M48G7D	QPSK	0.114	20.55
LTE Band 17	706.5 – 713.5	4M49W7D	16QAM	0.084	19.24
LTE Band 17	709 – 711	8M97G7D	QPSK	0.107	20.31
LTE Band 17	709 – 711	8M97W7D	16QAM	0.079	18.95
LTE Band 41	2498.5 – 2687.5	4M46G7D	QPSK	0.493	26.93
LTE Band 41	2498.5 – 2687.5	4M46W7D	16QAM	0.451	26.54
LTE Band 41	2501.0 – 2685.0	8M93G7D	QPSK	0.530	27.24
LTE Band 41	2501.0 – 2685.0	8M92W7D	16QAM	0.456	26.59
LTE Band 41	2503.5 – 2682.5	13M4G7D	QPSK	0.526	27.21
LTE Band 41	2503.5 – 2682.5	13M4W7D	16QAM	0.509	27.07
LTE Band 41	2506.0 – 2680.0	17M8G7D	QPSK	0.484	26.85
LTE Band 41	2506.0 – 2680.0	17M9W7D	16QAM	0.451	26.54

Table 0-1. Emission Designator

1. INTRODUCTION

1.1. General

These measurement tests were conducted at SAMSUNG Electronics QA Laboratory.
The site address is 129 Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea.

2. PRODUCT INFORMATION

2.1. Equipment Description

The Equipment Under Test (EUT) is the Samsung Portable Handset FCC ID: A3LSMJ530. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

2.2. Device Capabilities

This device contains the following capabilities:

1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), ANT+, NFC.

– End of this page –

3. DESCRIPTION OF TESTS

3.1. Evaluation Procedure

The measurement procedures described in the document titled “Land Mobile FM or PM - Communications Equipment- Measurements and Performance Standards” (ANSI/TIA-603-D-2010) and “Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1MHz) Digital Transmission System” (KDB 971168) were used in the measurement of the Samsung Portable Handset FCC ID: A3LSMJ530.

3.2. Measurement Procedure for Radiated Power and Radiated Spurious Emissions

The radiated and spurious measurements were made at the full anechoic chamber. The equipment under test was placed on the Turn Device at the same height and a distance of 3-meters from the measuring antenna.

The turn device is designed for mobile device measurements. Different sized devices can be mounted on the mounting bracket made of Rohacell.

The turn device is mounted onto a turntable to have both 360° vertical and horizontal rotation. The measurement was made for each horizontal/vertical position in combination with horizontally and vertically polarized measuring antenna at Fully-anechoic chamber, it is equivalent to test in 3-orthogonal planes.

The substitution antenna will replace the EUT antenna at the same position. The frequency of the signal generator shall be set to the frequencies that were measured on the EUT. The output level of the signal generator shall be adjusted until an equal or a known related level that was measured from the EUT. This level was recorded. For emissions above 1 GHz, the above procedure is repeated by using horn antennas and dBi gain is taken into consideration.

The power of the emission is calculated using the following formula:

$$P_{d[dBm]} = P_{g[dBm]} - \text{cable loss}_{[dB]} + \text{antenna gain}_{[dBd,dBi]}$$

Where P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole(dBd) or an isotropic source(dBi). The cable connects the generator to the substitute antenna.

Radiated power levels and radiated spurious emissions levels are investigated per ANSI/TIA-603-D-2010.

3.3. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

4. TEST EQUIPMENT LIST

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

Description	Model	Serial No.	Manufacturer	Cal. Date	Cal. Due
Wideband Radio Communication Tester	CMW500	140748	R&S	2016-10-28	2017-10-28
Wideband Radio Communication Tester	CMW500	140697	R&S	2017-02-17	2018-02-17
Signal & Spectrum Analyzer	FSW	103775	R&S	2016-12-19	2017-12-19
MXE EMI RECEIVER	N9038A	MY52260190	Agilent	2017-04-24	2018-04-24
PSG Analog Signal Generator	E8257D	MY51501209	Agilent	2016-11-29	2017-11-29
EPM Series Power Meter	E4419B	GB41293846	Agilent	2016-09-23	2017-09-23
POWER SENSOR	E9300H	MY41495838	Agilent	2016-09-23	2017-09-23
DC Power Supply	E3642A	MY40022438	Agilent	2017-02-16	2018-02-16
Temperature Humidity Chamber	SH-241	92000548	Espec	2016-11-10	2017-11-10
Loop Antenna	HFH2-Z2	100275	R&S	2015-06-04	2017-06-04
Loop Antenna	HFH2-Z2	100276	R&S	2016-05-23	2018-05-23
DIPOLE ANTENNA	UHA 9105	9105-2412	Schwarzbeck	2015-09-08	2017-09-08
DIPOLE ANTENNA	UHA 9105	9105-2413	Schwarzbeck	2015-09-08	2017-09-08
LOG PERIODIC DIPOLE ANTENNA	HL040	353255/019	R&S	2015-08-28	2017-08-28
LOG PERIODIC DIPOLE ANTENNA	HL040	353255/020	R&S	2016-11-11	2018-11-11
HORN Antenna	3115	153606	ETS LINDGREN	2015-09-01	2017-09-01
HORN Antenna	3115	143185	ETS LINDGREN	2015-09-01	2017-09-01
HORN Antenna & Pre-amplifier assembly	HAP18-26N	216249	Flann	2015-12-02	2017-12-02
HORN Antenna & Pre-amplifier assembly	HAP26-40N	216253	Flann	2015-12-02	2017-12-02
PRE-AMPLIFIER	8449B	3008A00691	Agilent	2016-11-22	2017-11-22
RF Power Amplifier	5S1G4	304866	AR	2017-02-10	2018-02-10
Hygrothermograph Data Logger	SK-L200TH2a	1373	SATO	2016-06-09	2017-06-09
Hygrothermograph Data Logger	SK-L200TH2a	5077	SATO	2016-11-15	2017-11-15
Hygrothermograph Data Logger	SK-L200TH2a	5110	SATO	2016-10-31	2017-10-31
Power Divider	11636B	56918	Agilent	2016-10-20	2017-10-20
Highpass Filter	WHVX1.0/15G-10SS	39	Wainwright	2017-01-12	2018-01-12
Highpass Filter	WHKX3.0/18G-10SS	186	Wainwright	2016-10-26	2017-10-26
Attenuator 10dB	8491B	MY39264180	Agilent	2016-06-28	2017-06-28
Attenuator 20dB	8493C	74158	Agilent	2016-08-19	2017-08-19

Table 4-1. Test Equipment

Note

1. For equipment listed above that has calibration dates that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

5. SAMPLE CALCULATIONS

5.1. QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission

5.2. 16QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz
W = Amplitude/Angle Modulation
7 = Quantized/Digital Info
D = Data transmission

5.3. Spurious Radiated Emission

Example: Spurious emission at 3700.40MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turn device was -81.0dBm. The gain of the substituted antenna is 8.1dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0dB at 3700.40MHz. So 6.1dB is added to the signal generator reading of -30.9dBm yielding -24.80dBm. The fundamental EIRP was 25.50dBm so this harmonic was 25.50dBm - (-24.80) = 50.3dBc.

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6. TEST RESULTS

6.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)					
2.1049	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 6.2
2.1051 27.53(g)	Conducted Band Edge / Spurious Emissions	> 43 +10 $\log_{10}$ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Sections 6.3, 6.4
27.53(m)	Conducted Band Edge / Spurious Emissions	> 40+10$\log_{10}$ (P[Watts]) between channel edge and 5 MHz from the channel edge, > 43+10$\log_{10}$ (P[Watts]) between 5 MHz and X MHz from the channel edge, or between 2490.5 MHz and 2496 MHz, > 55+10$\log_{10}$ (P[Watts]) more than X MHz from the channel edge, or below 2490.5 MHz, where X is the grater of 6 MHz or the actual emission bandwidth.		PASS	Sections 6.3, 6.4
2.1046	Transmitter Conducted Output Power	N/A		PASS	See SAR Report
2.1055 27.54	Frequency Stability	Fundamental emissions stay within authorized frequency block		PASS	Section 6.5
27.50(c.10)	Effective Radiated Power (Band 17)	< 3 Watts max. ERP	RADIATED	PASS	Section 6.6
27.50(h.2)	Equivalent Isotropic Radiated Power (Band 41)	< 2 Watts max. EIRP		PASS	Section 6.6
2.1053 27.53(g)	Radiated Spurious Emissions	> 43 + log10 (P[Watts]) for all out-of-band emissions		PASS	Section 6.7
27.53(m)	Radiated Spurious Emissions	> 40+10$\log_{10}$ (P[Watts]) between channel edge and 5 MHz from the channel edge, > 43+10$\log_{10}$ (P[Watts]) between 5 MHz and X MHz from the channel edge, or between 2490.5 MHz and 2496 MHz, > 55+10$\log_{10}$ (P[Watts]) more than X MHz from the channel edge, or below 2490.5 MHz, where X is the grater of 6 MHz or the actual emission bandwidth.		PASS	Section 6.7

Table 6-1. Summary of Test Results

Notes:

1. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

2. The analyzer plots shown in this section were all taken with a correction value loaded into the analyzer. The correction value was used to account for the losses of the cables, couplers, and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

3. All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and couplers.

4. For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Rohde & Schwarz and SAMSUNG Electronics “CMWrun", Version 1.8.1.

6.2. Occupied Bandwidth
§2.1049

Test Overview

The Occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 v02r02 – Section 4.2

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% Occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

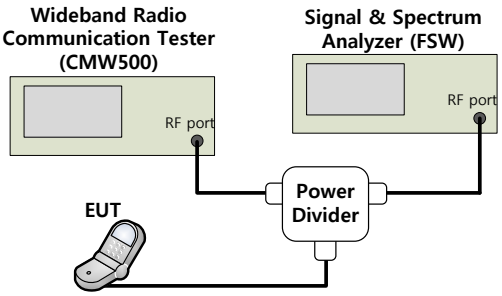
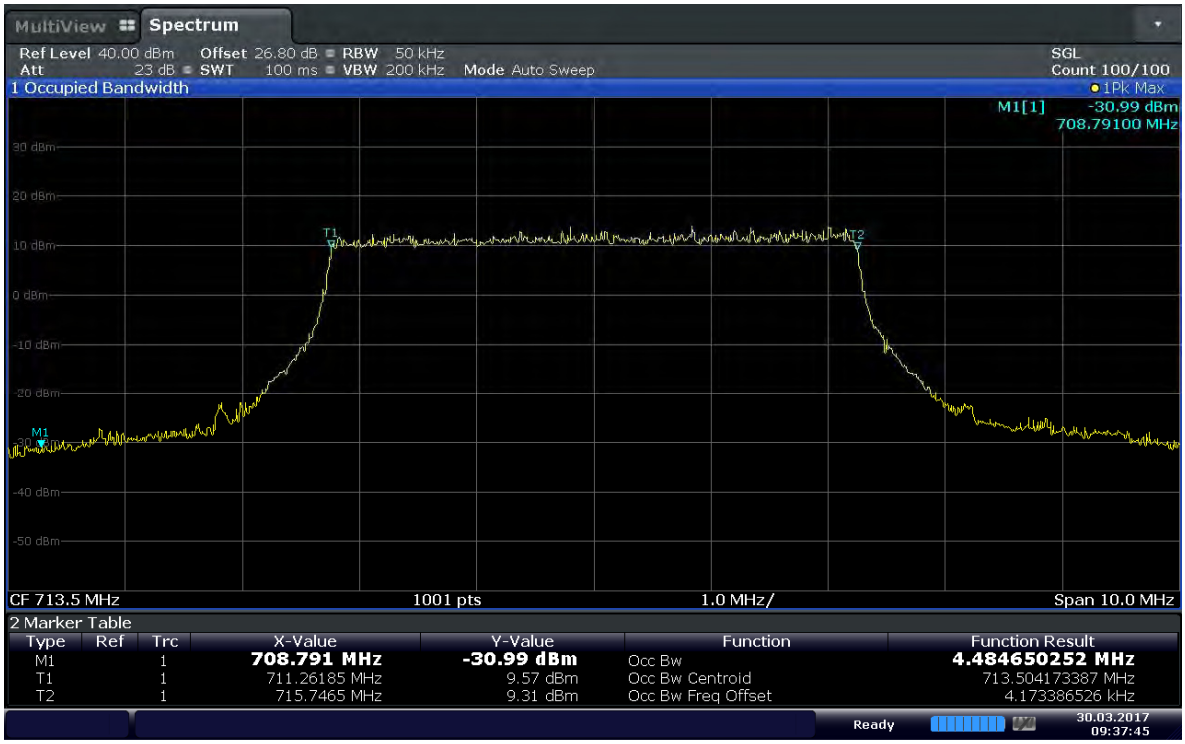


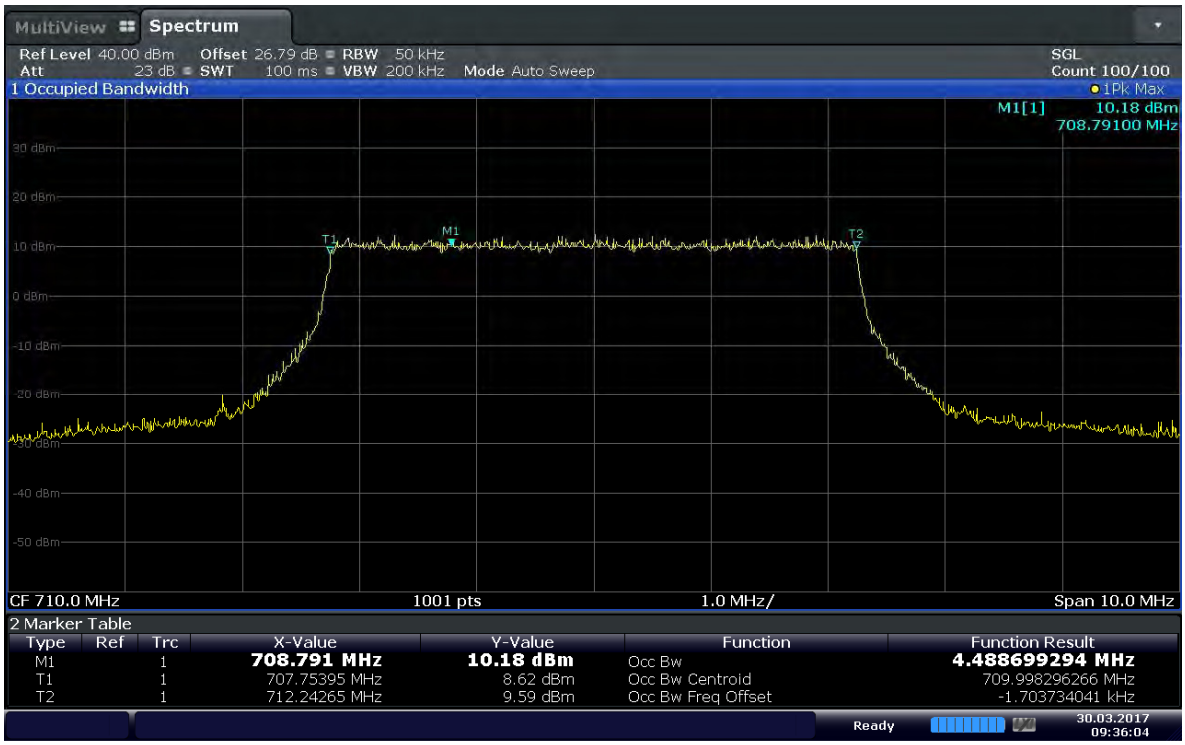
Figure 6-1. Test Instruments & Measurement Setup

Test Plots



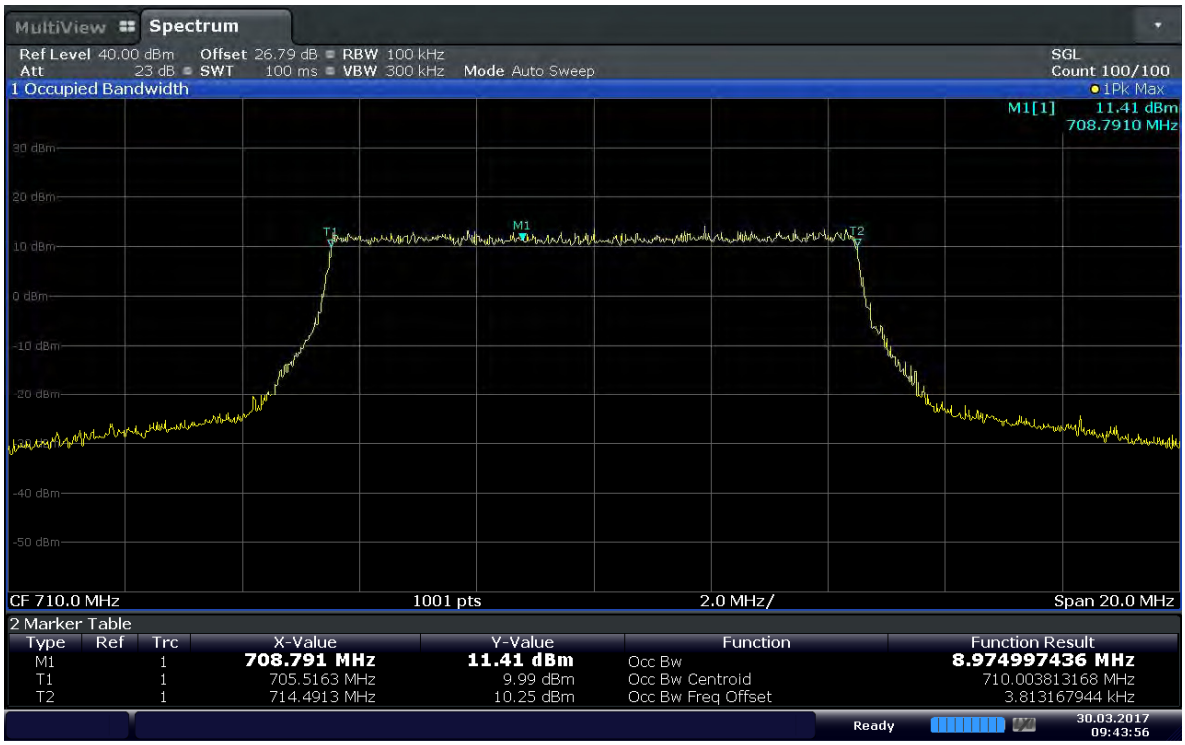
09:37:45 30.03.2017

Plot 6-1. Occupied Bandwidth Plot (Band 17 – 5MHz QPSK - RB Size 25)



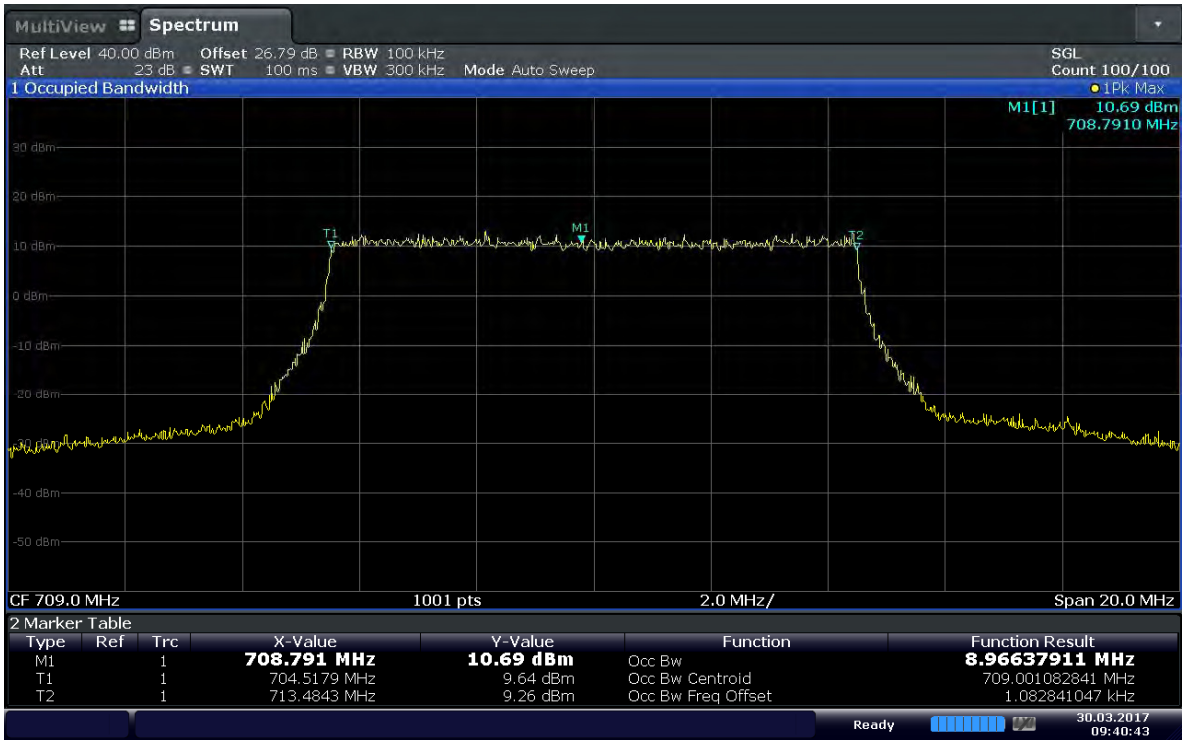
09:36:06 30.03.2017

Plot 6-2. Occupied Bandwidth Plot (Band 17 – 5MHz 16QAM - RB Size 25)



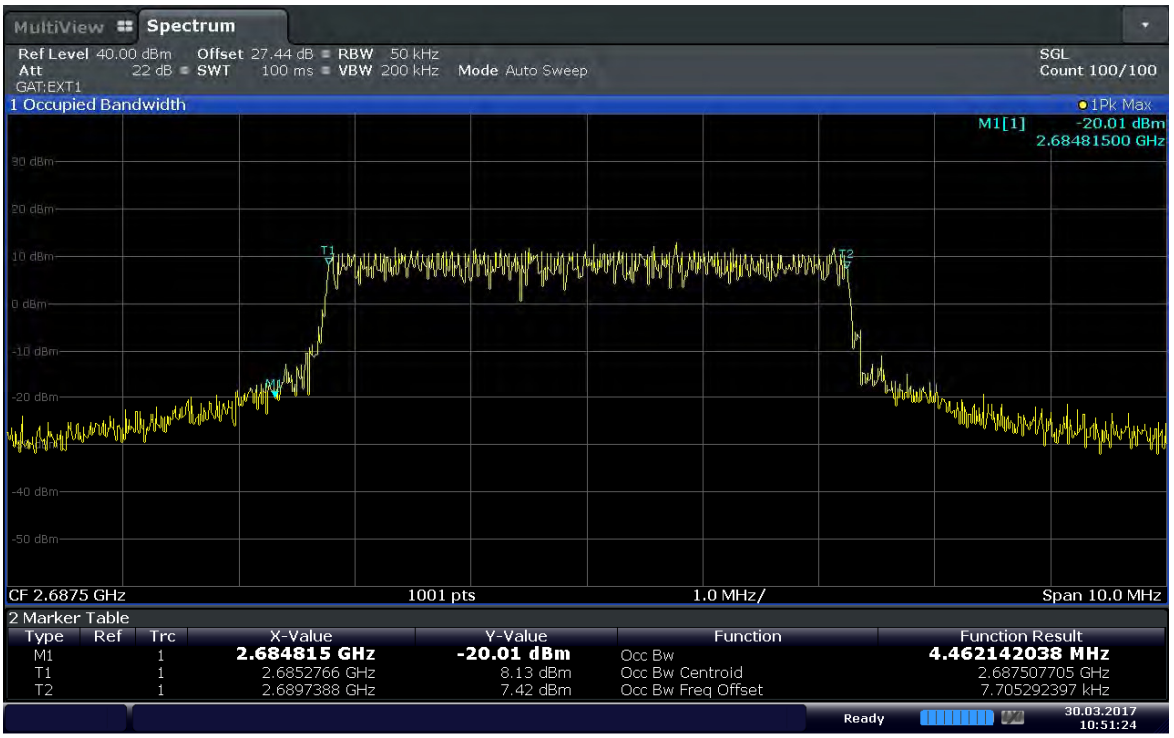
09:43:56 30.03.2017

Plot 6-3. Occupied Bandwidth Plot (Band 17 – 10MHz QPSK - RB Size 50)



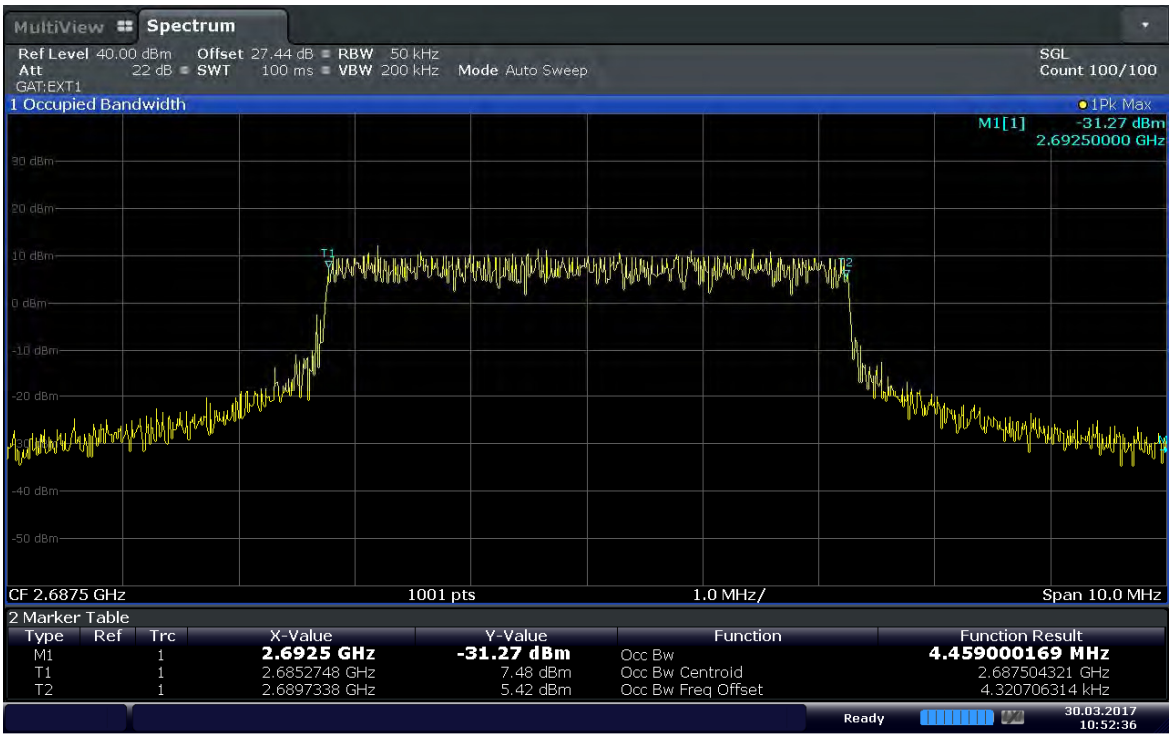
09:40:44 30.03.2017

Plot 6-4. Occupied Bandwidth Plot (Band 17 – 10MHz 16QAM - RB Size 50)



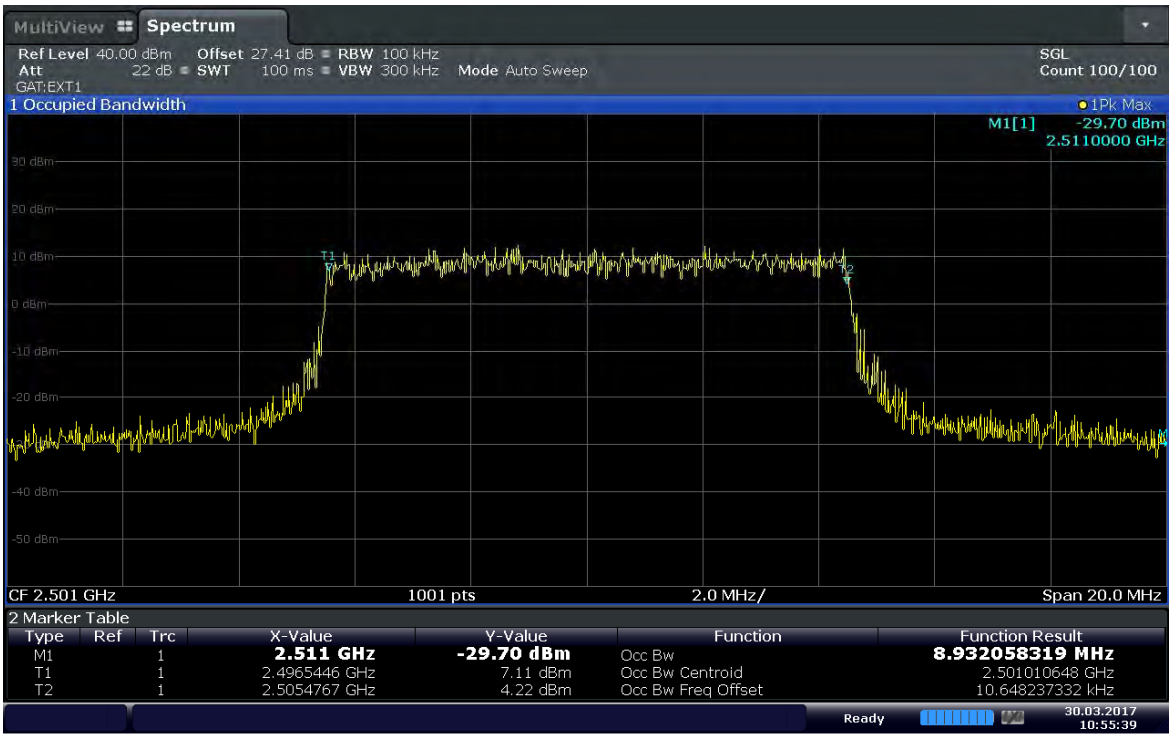
10:51:25 30.03.2017

Plot 6-5. Occupied Bandwidth Plot (Band 41 – 5MHz QPSK - RB Size 25)



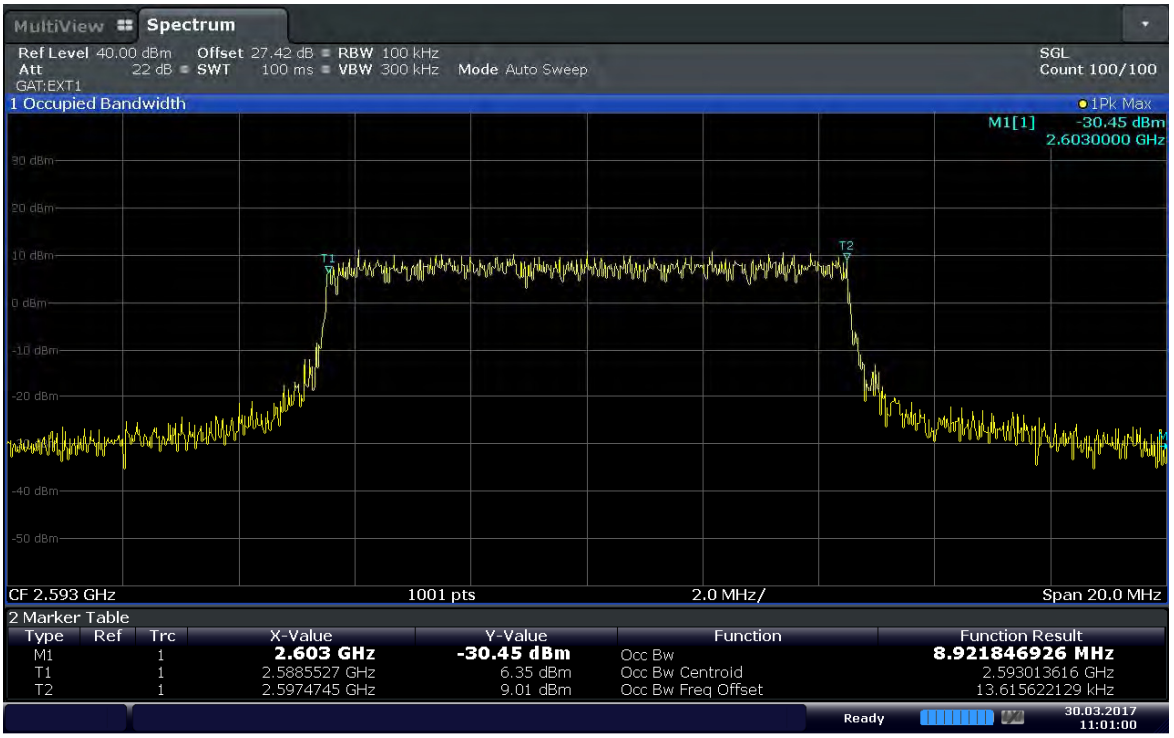
10:52:37 30.03.2017

Plot 6-6. Occupied Bandwidth Plot (Band 41 – 5MHz 16QAM - RB Size 25)



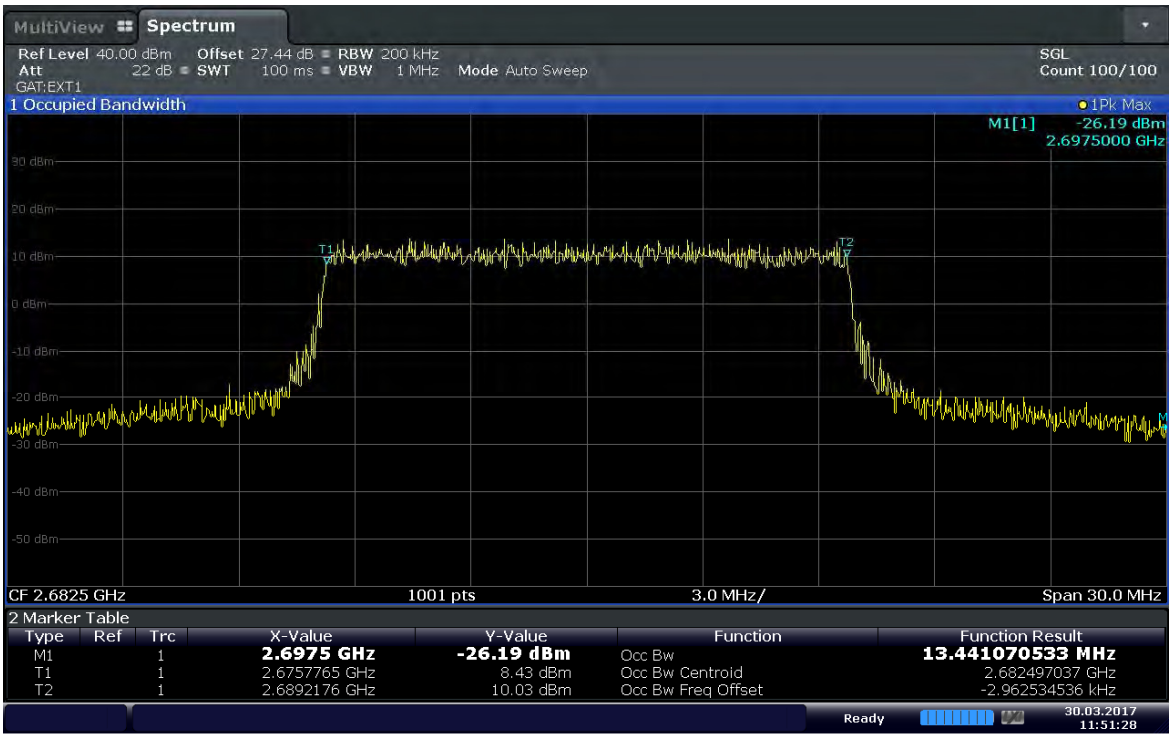
10:55:40 30.03.2017

Plot 6-7. Occupied Bandwidth Plot (Band 41 – 10MHz QPSK - RB Size 50)



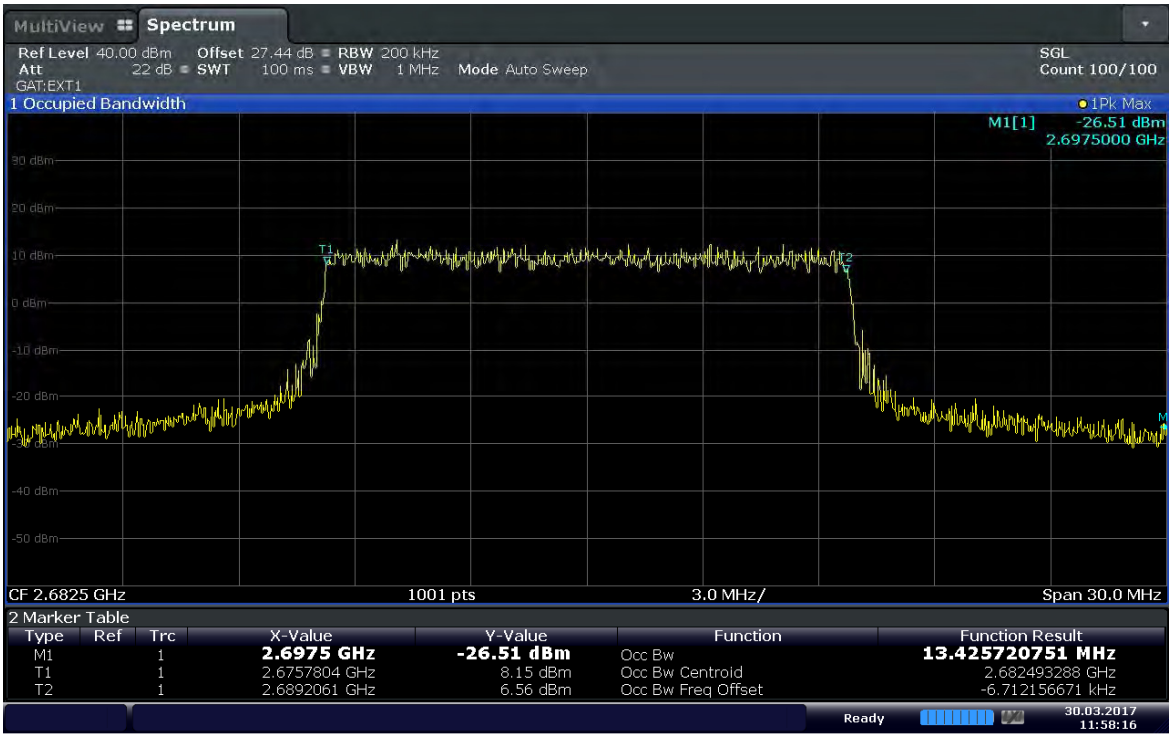
11:01:00 30.03.2017

Plot 6-8. Occupied Bandwidth Plot (Band 41 – 10MHz 16QAM - RB Size 50)



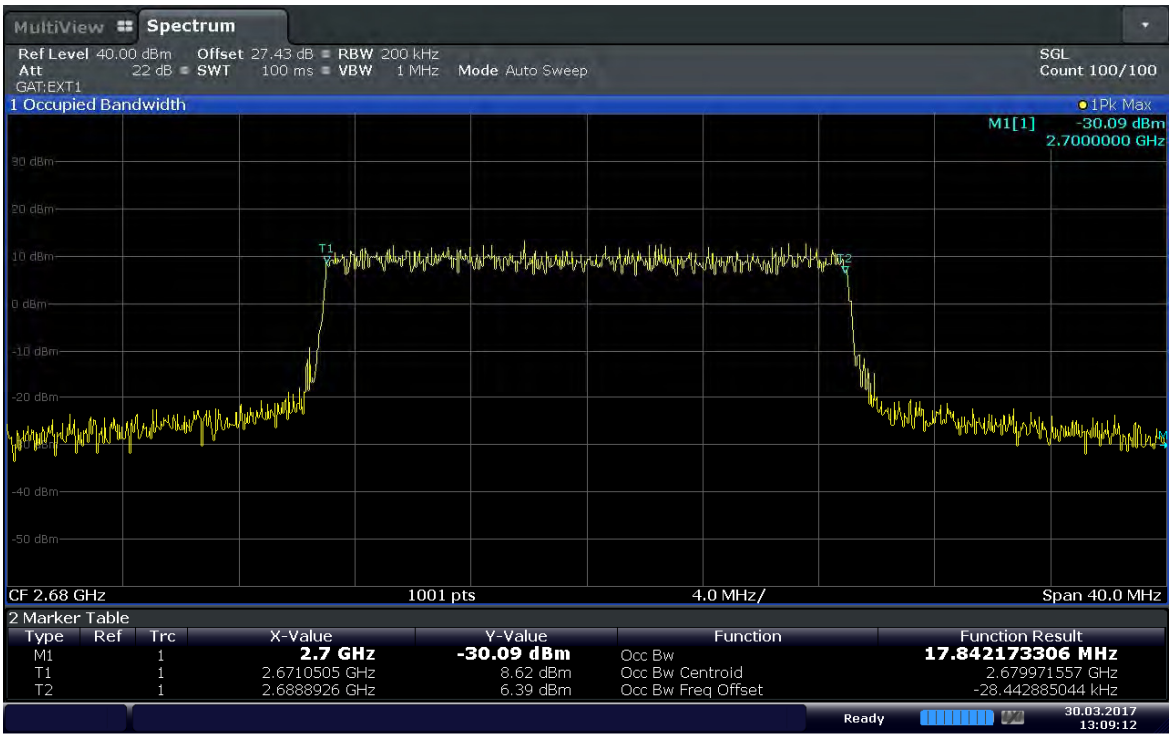
11:51:29 30.03.2017

Plot 6-9. Occupied Bandwidth Plot (Band 41 - 15MHz QPSK - RB Size 75)



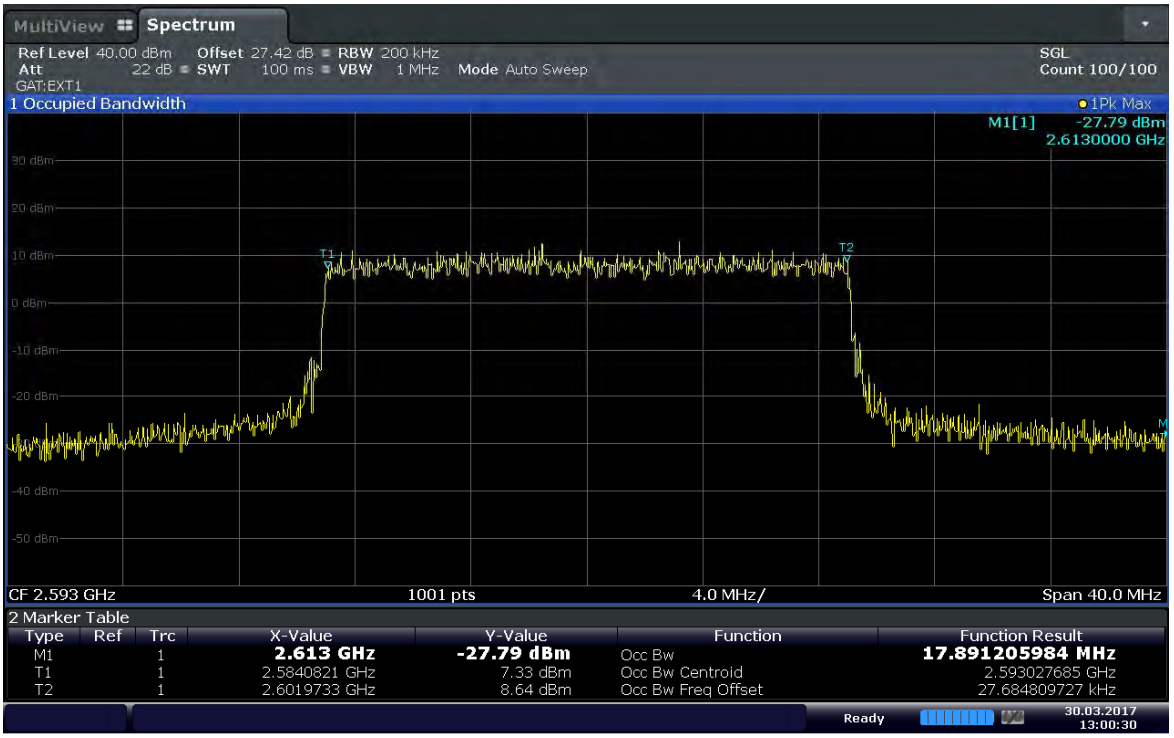
11:58:17 30.03.2017

Plot 6-10. Occupied Bandwidth Plot (Band 41 - 15MHz 16QAM - RB Size 75)



13:09:12 30.03.2017

Plot 6-11. Occupied Bandwidth Plot (Band 41 - 20MHz QPSK - RB Size 100)



13:00:31 30.03.2017

Plot 6-12. Occupied Bandwidth Plot (Band 41 - 20MHz 16QAM - RB Size 100)

6.3. Spurious and Harmonic Emissions at Antenna Terminal
§2.1051 §27.53(g) §27.53(m)

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is $55 + 10\log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts. Limit equivalent to -25dBm, calculation shown below.

$$55 + 10\log_{10}(1.567\text{W}) = 56.95\ \text{dB}$$
$$1.567\text{W} = 31.95\ \text{dBm}$$
$$31.95\ \text{dBm} - 56.95\ \text{dB} = -25\ \text{dBm}$$

Test Procedure Used

KDB 971168 v02r02 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency
2. RBW ≥ 1 MHz
3. VBW ≥ 3 x RBW
4. Detector = RMS
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

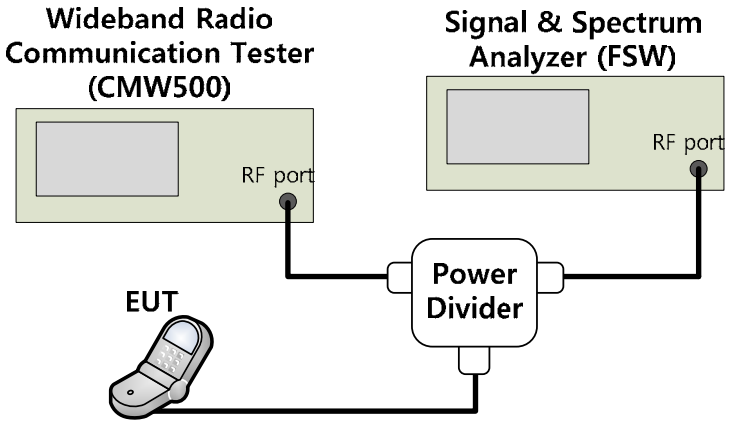

Figure 6-2. Test Instruments & Measurement Setup

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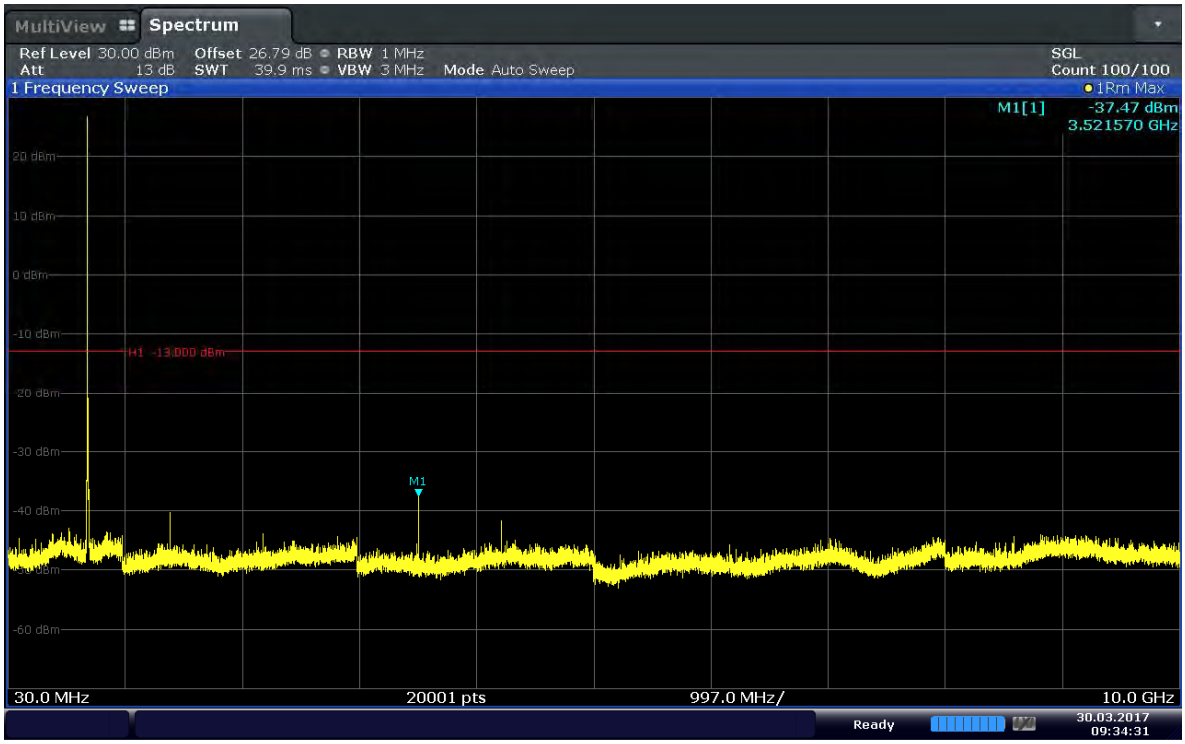
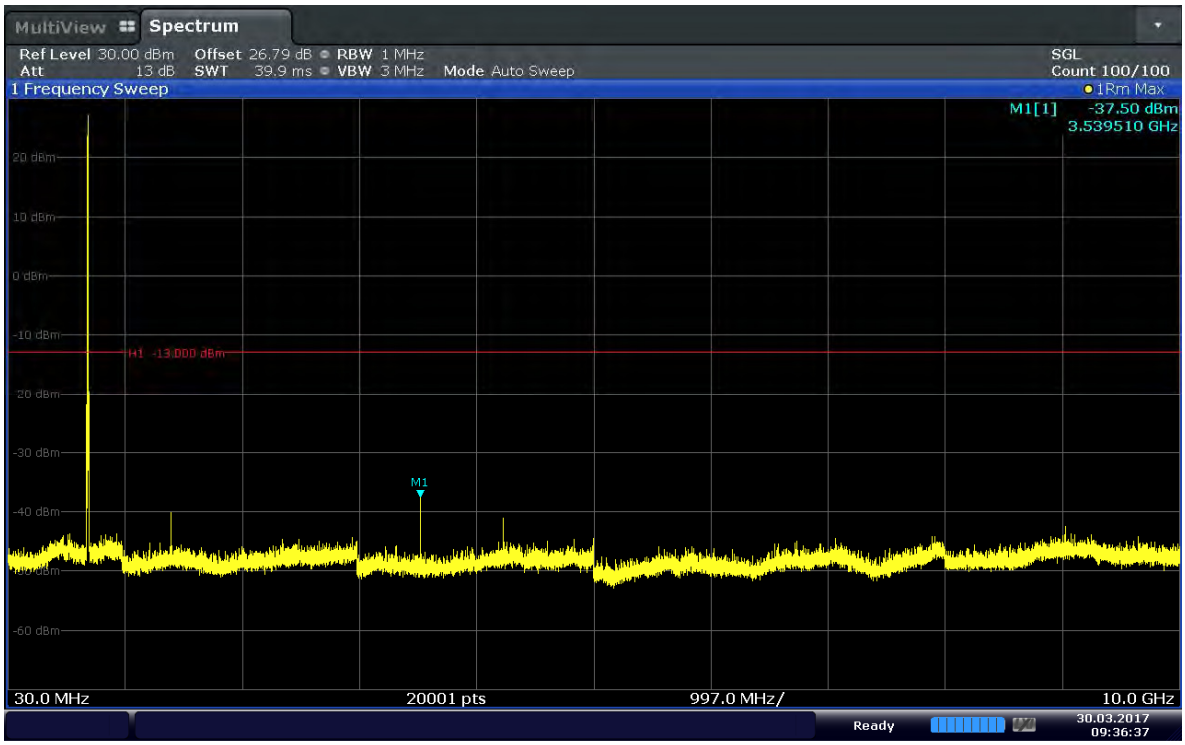
Test Plots



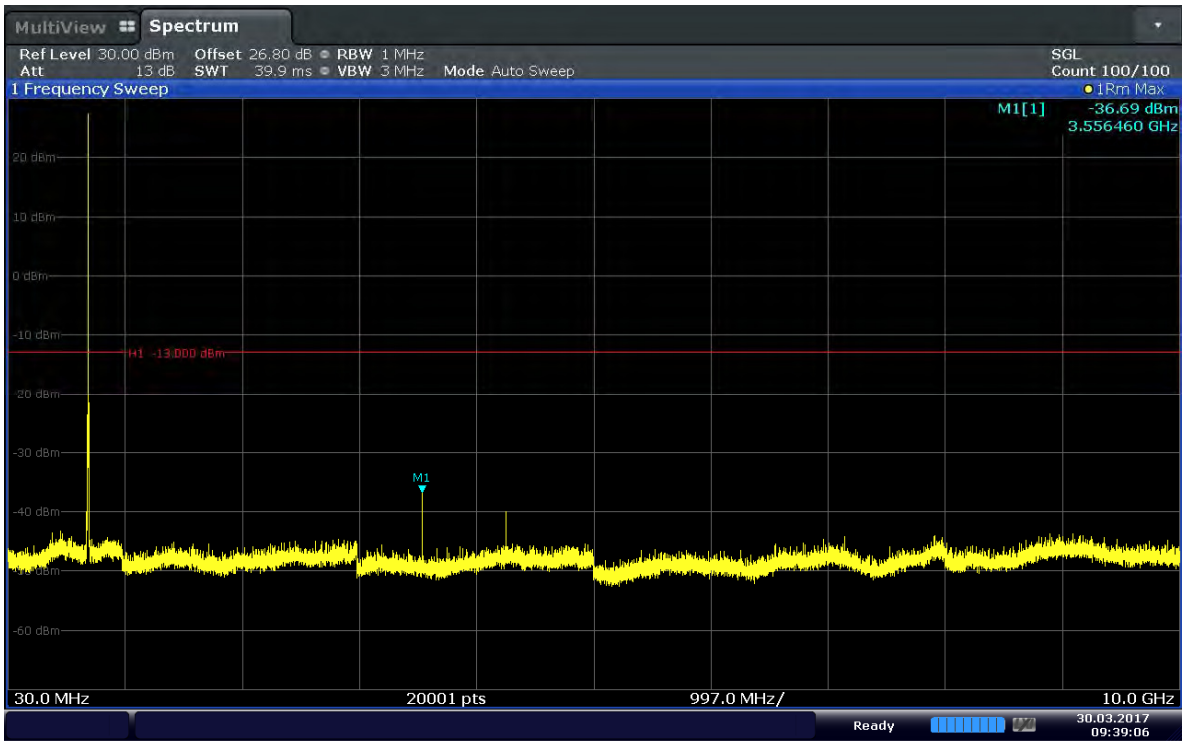
09:34:32 30.03.2017

Plot 6-13. Conducted Spurious Plot (Band 17–5MHz–QPSK–RB Size 1–RB Offset 0–Ch.23755)



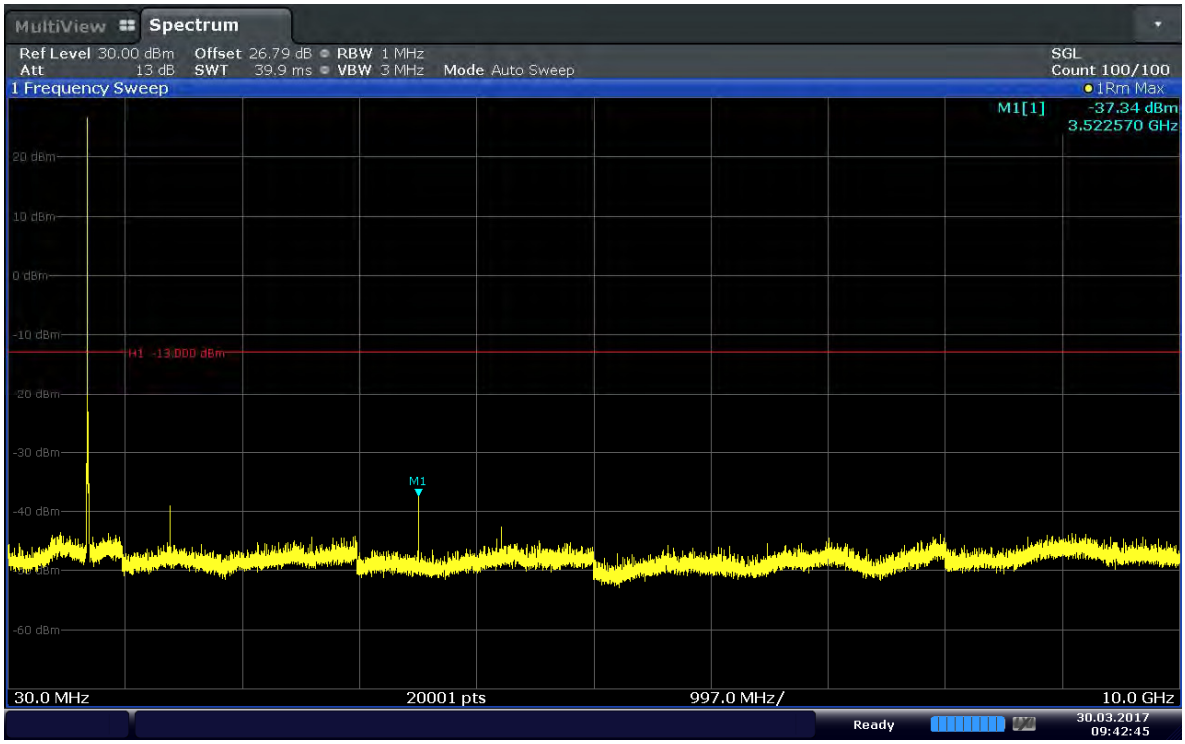
09:36:37 30.03.2017

Plot 6-14. Conducted Spurious Plot (Band 17–5MHz–QPSK–RB Size 1–RB Offset 0–Ch.23790)



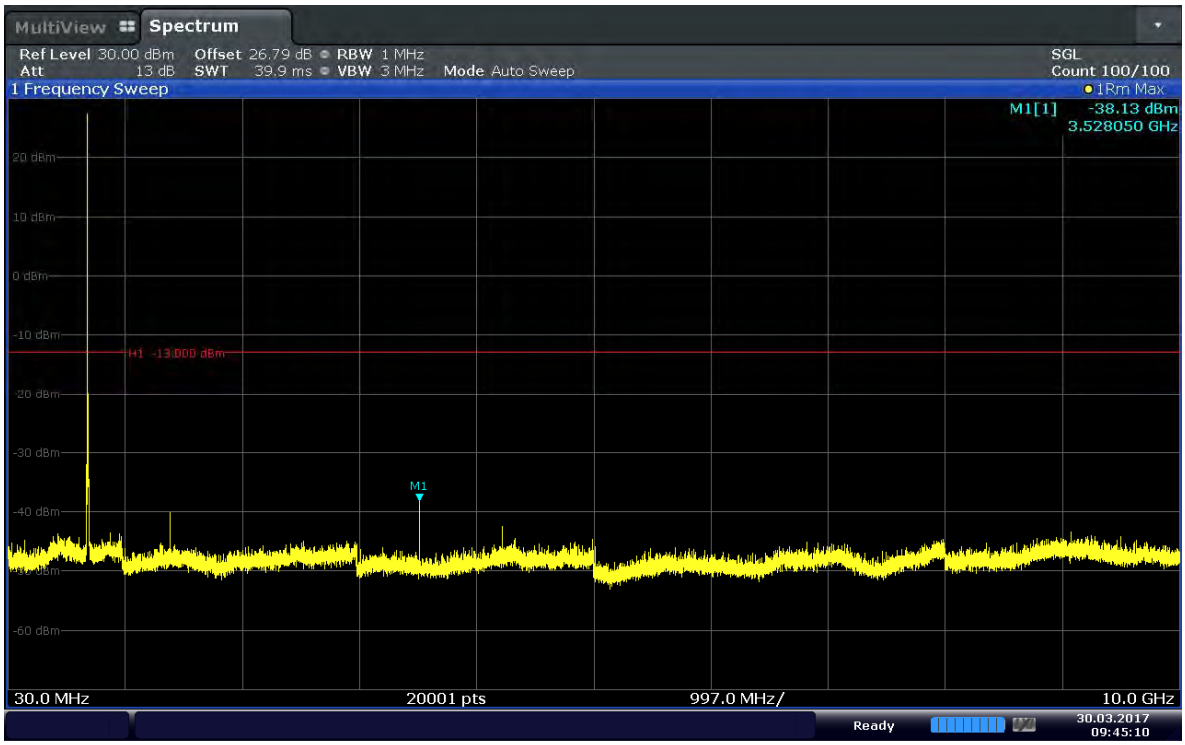
09:39:07 30.03.2017

Plot 6-15. Conducted Spurious Plot (Band 17–5MHz–QPSK–RB Size 1–RB Offset 0–Ch.23825)



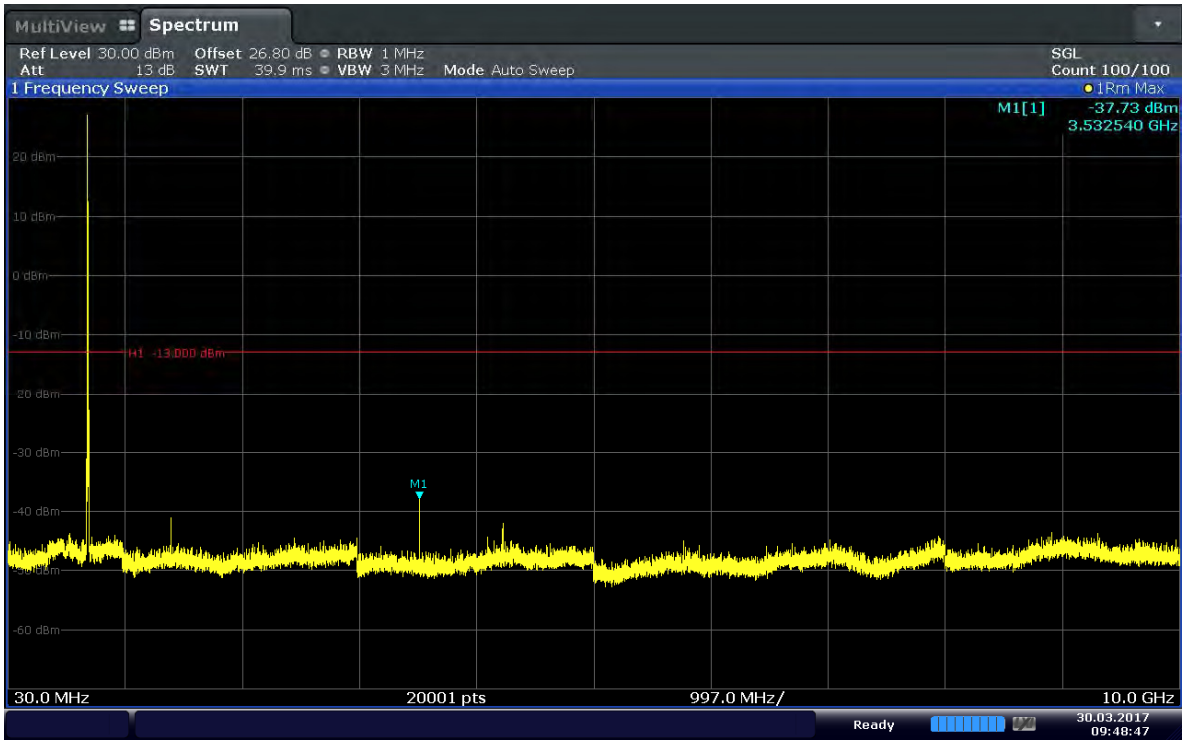
09:42:46 30.03.2017

Plot 6-16. Conducted Spurious Plot (Band 17–10MHz–QPSK–RB Size 1–RB Offset 0–Ch.23780)



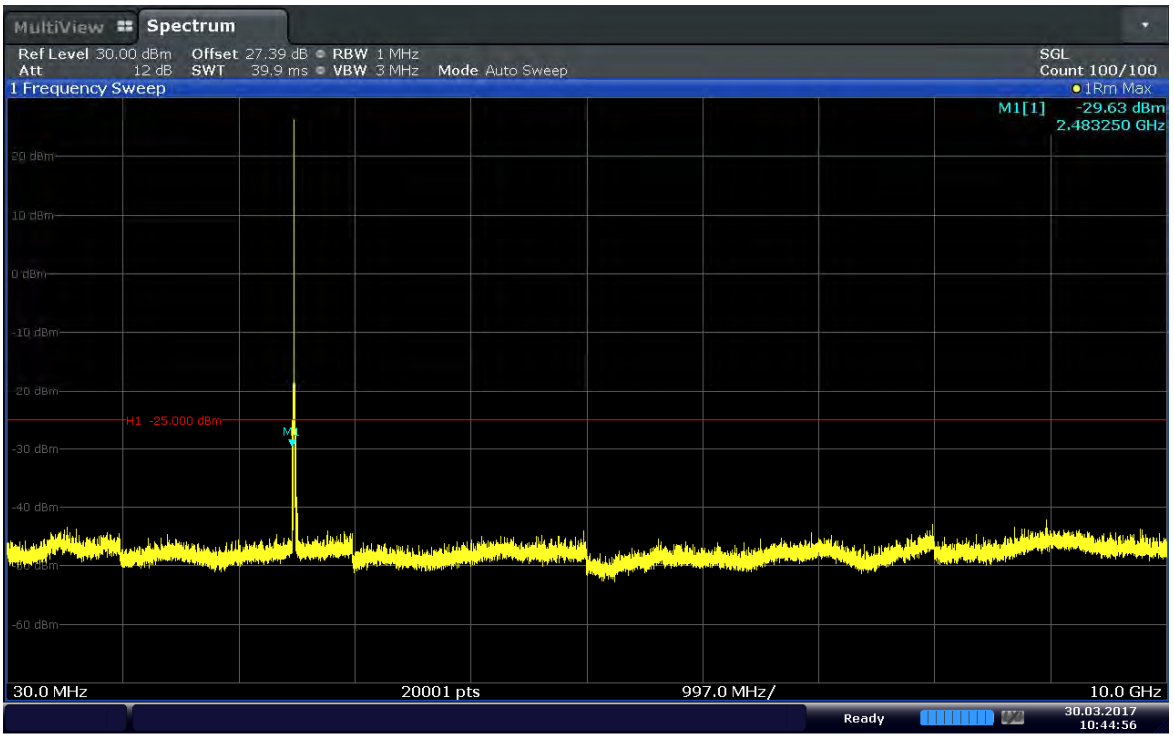
09:45:11 30.03.2017

Plot 6-17. Conducted Spurious Plot (Band 17–10MHz–QPSK–RB Size 1–RB Offset 0–Ch.23790)



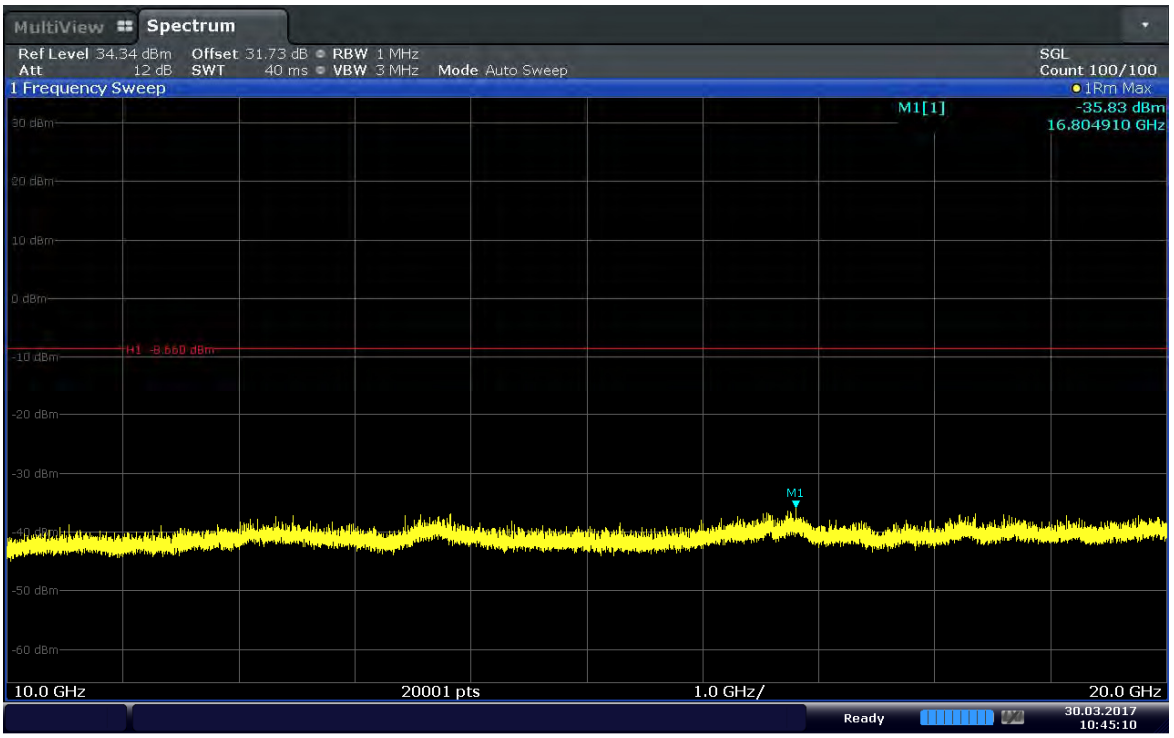
09:48:48 30.03.2017

Plot 6-18. Conducted Spurious Plot (Band 17–10MHz–QPSK–RB Size 1–RB Offset 0–Ch.23800)



10:44:56 30.03.2017

Plot 6-19. Conducted Spurious Plot (Band 41–5MHz–QPSK–RB Size 1–RB Offset 0–Ch.39675)

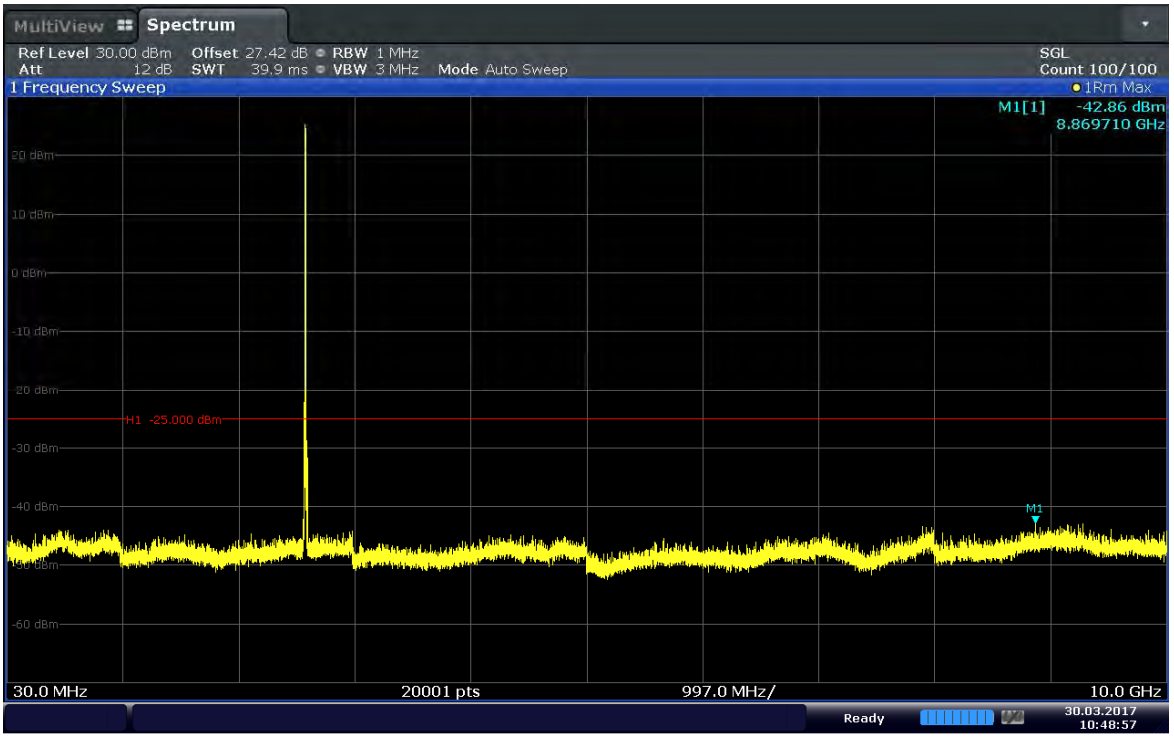


10:45:10 30.03.2017

Plot 6-20. Conducted Spurious Plot (Band 41–5MHz–QPSK–RB Size 1–RB Offset 0–Ch.39675)

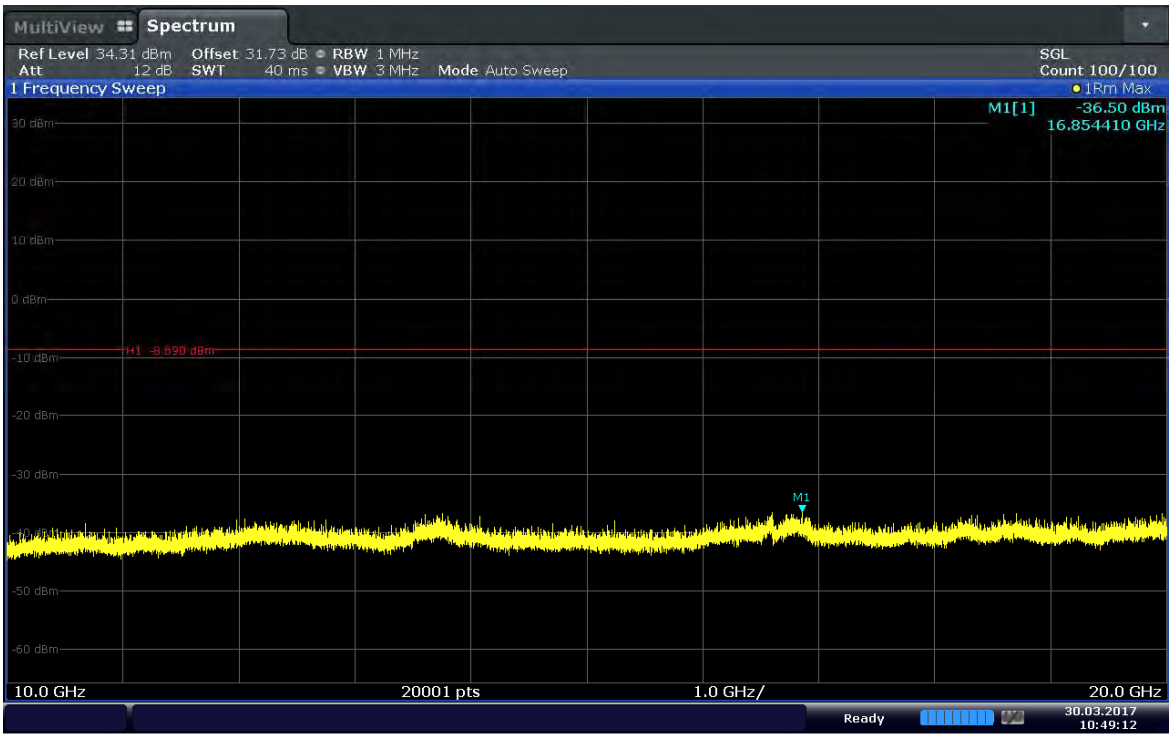
10:45:29 30.03.2017

Plot 6-21. Conducted Spurious Plot (Band 41–5MHz–QPSK–RB Size 1–RB Offset 0–Ch.39675)



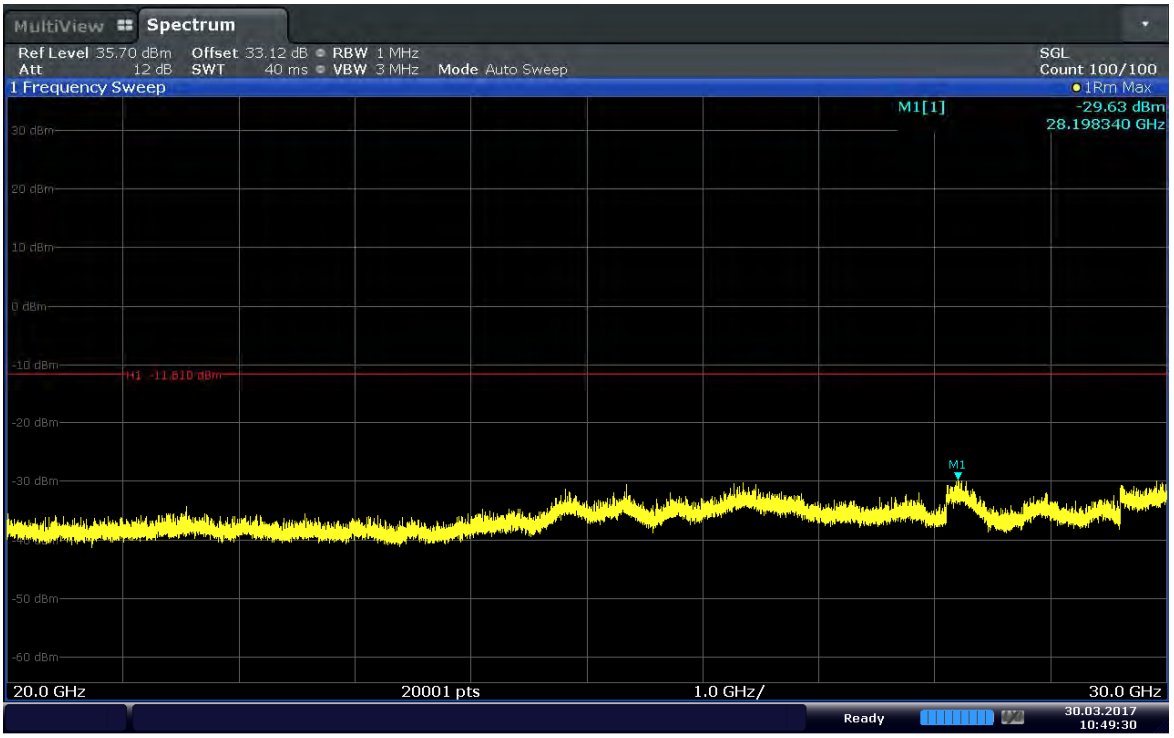
10:48:58 30.03.2017

Plot 6-22. Conducted Spurious Plot (Band 41–5MHz–QPSK–RB Size 1–RB Offset 24–Ch.40620)



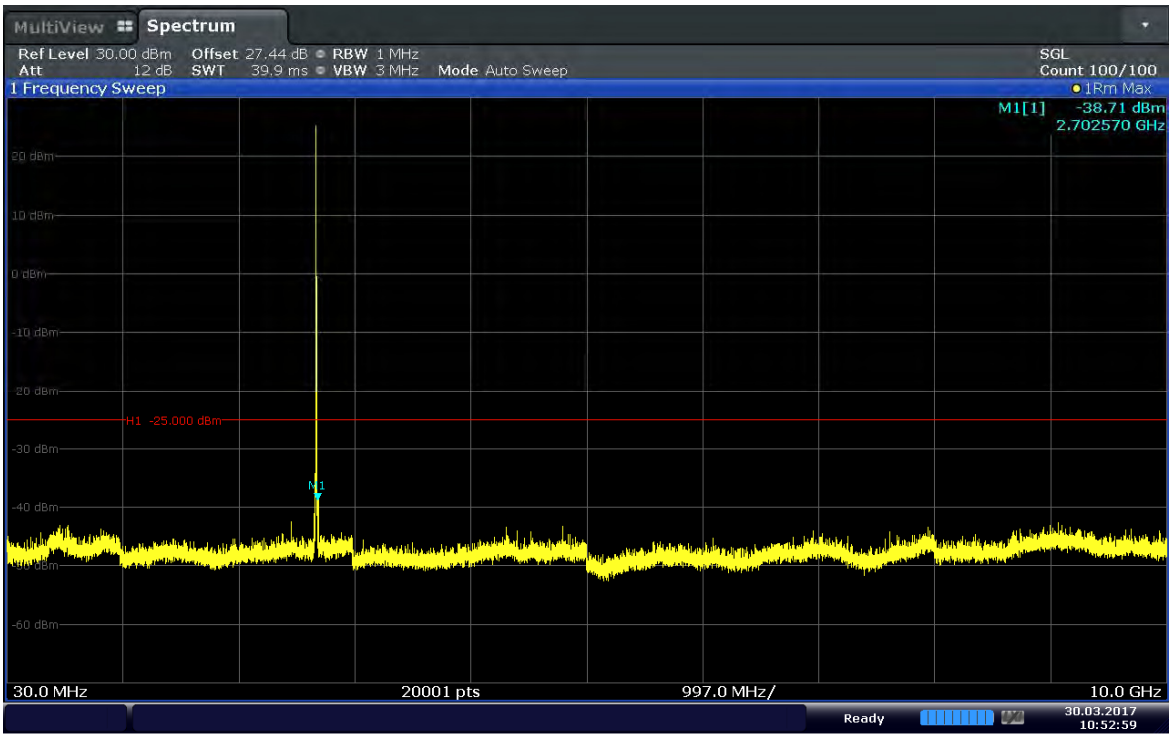
10:49:13 30.03.2017

Plot 6-23. Conducted Spurious Plot (Band 41–5MHz–QPSK–RB Size 1–RB Offset 24–Ch.40620)



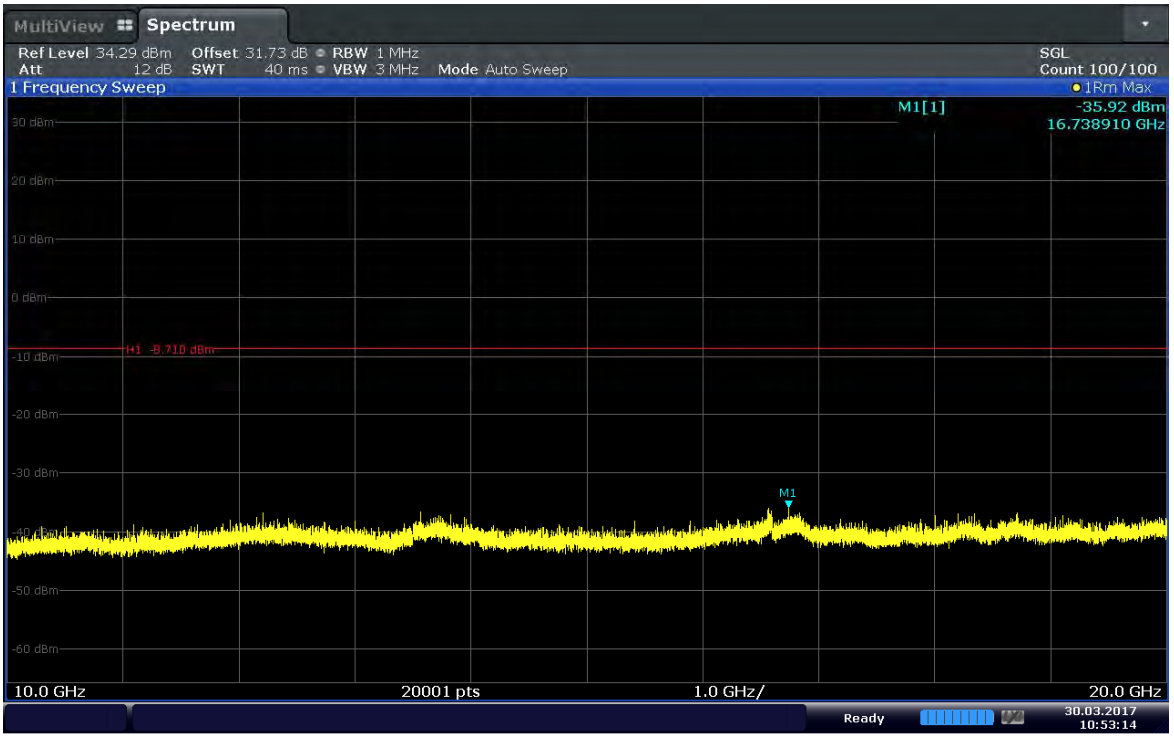
10:49:31 30.03.2017

Plot 6-24. Conducted Spurious Plot (Band 41–5MHz–QPSK– RB Size 1–RB Offset 24–Ch.40620)



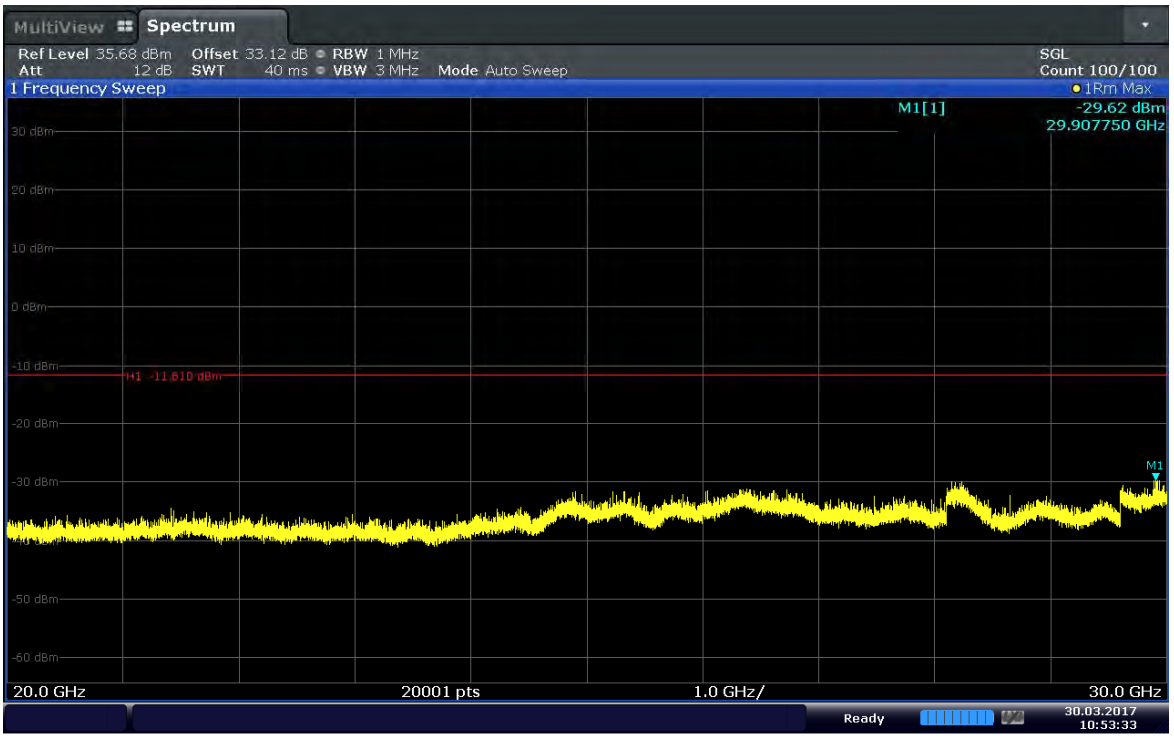
10:53:00 30.03.2017

Plot 6-25. Conducted Spurious Plot (Band 41–5MHz–QPSK–RB Size 1–RB Offset 12–Ch.41565)



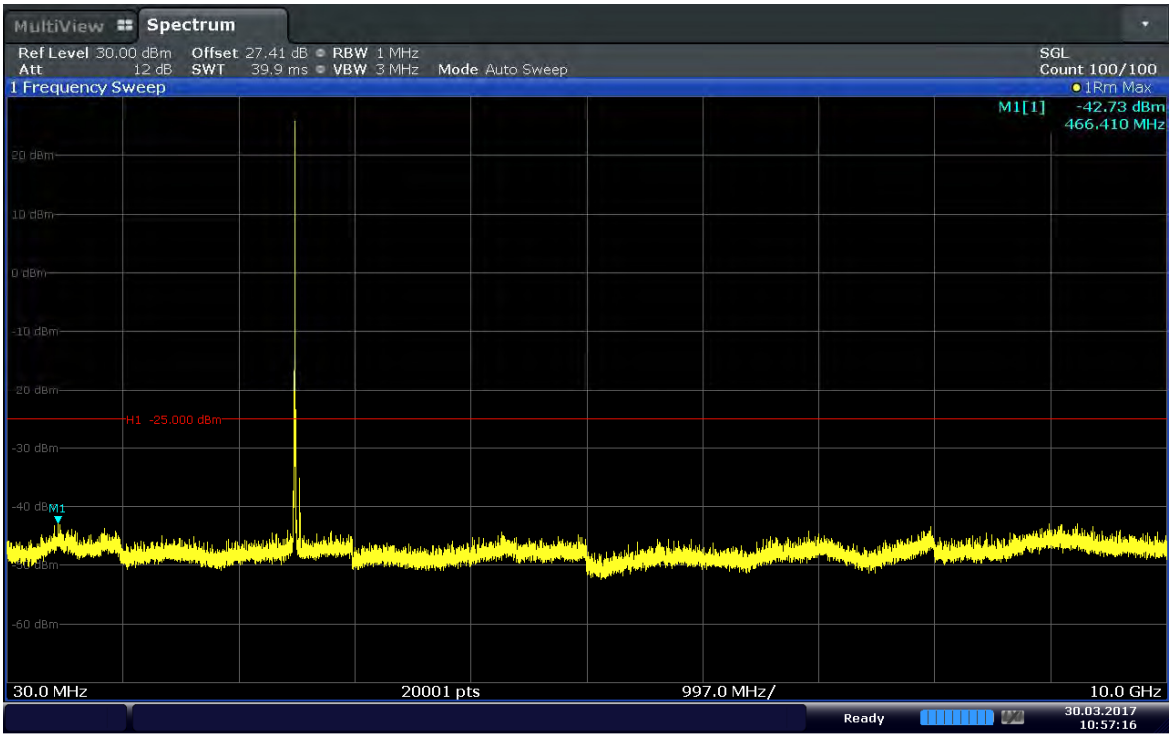
10:53:15 30.03.2017

Plot 6-26. Conducted Spurious Plot (Band 41–5MHz–QPSK– RB Size 1–RB Offset 12–Ch.41565)



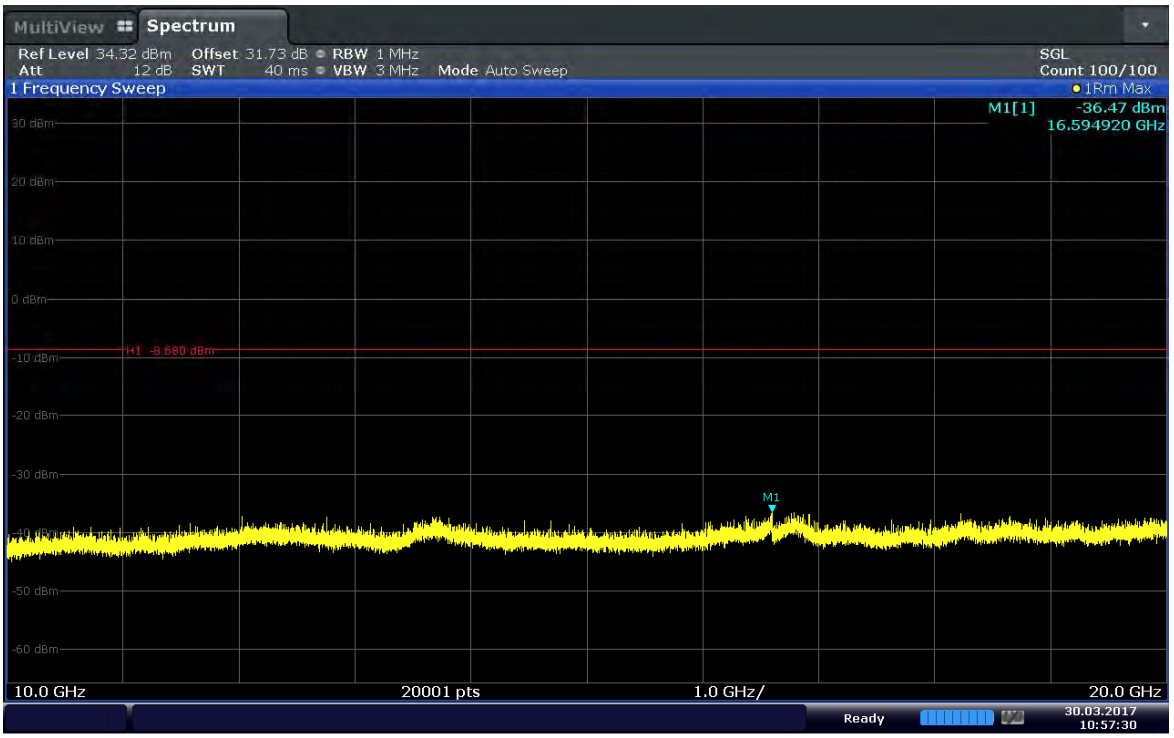
10:53:33 30.03.2017

Plot 6-27. Conducted Spurious Plot (Band 41–5MHz–QPSK– RB Size 1–RB Offset 12–Ch.41565)



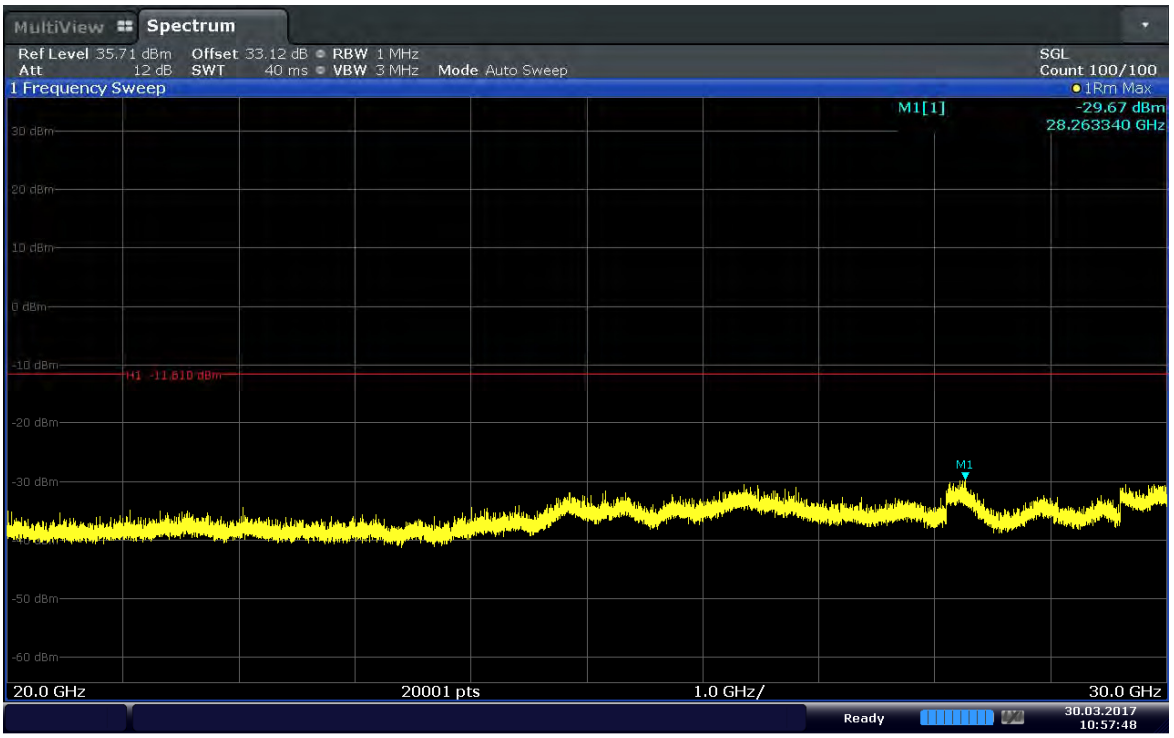
10:57:16 30.03.2017

Plot 6-28. Conducted Spurious Plot (Band 41–10MHz–QPSK–RB Size 1–RB Offset 49–Ch.39700)



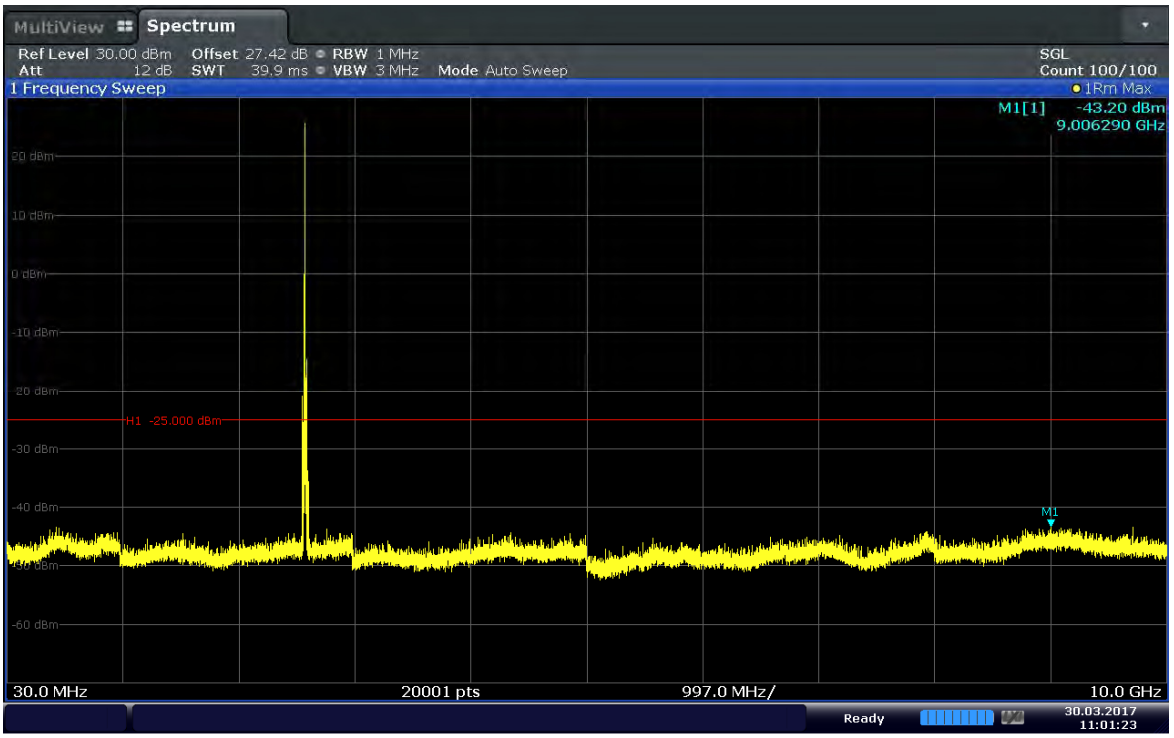
10:57:31 30.03.2017

Plot 6-29. Conducted Spurious Plot (Band 41–10MHz–QPSK– RB Size 1–RB Offset 49–Ch.39700)



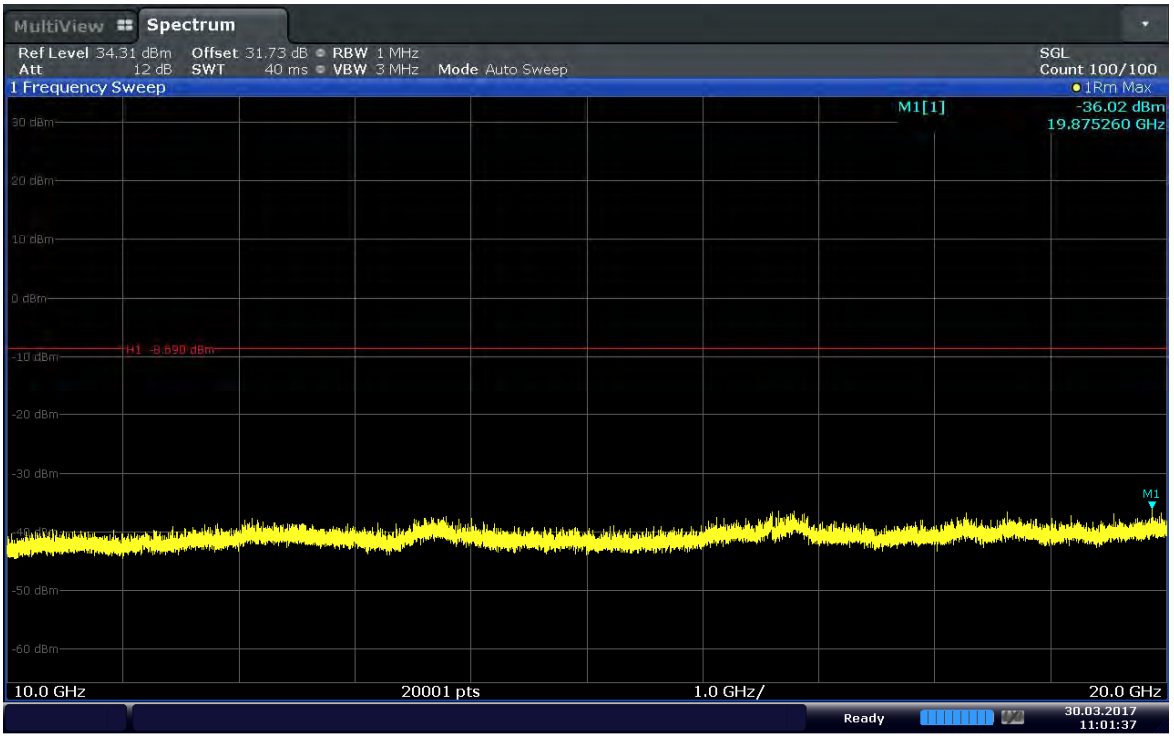
10:57:49 30.03.2017

Plot 6-30. Conducted Spurious Plot (Band 41–10MHz–QPSK– RB Size 1–RB Offset 49–Ch.39700)



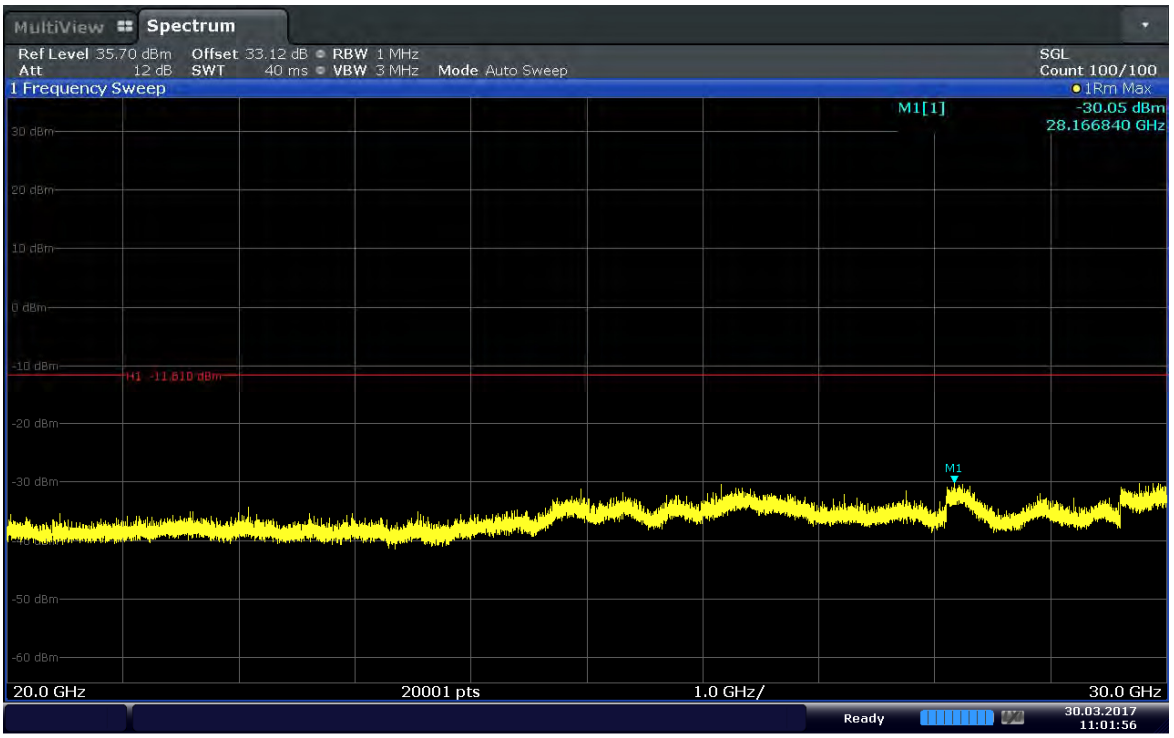
11:01:23 30.03.2017

Plot 6-31. Conducted Spurious Plot (Band 41–10MHz–QPSK–RB Size 1–RB Offset 0–Ch.40620)



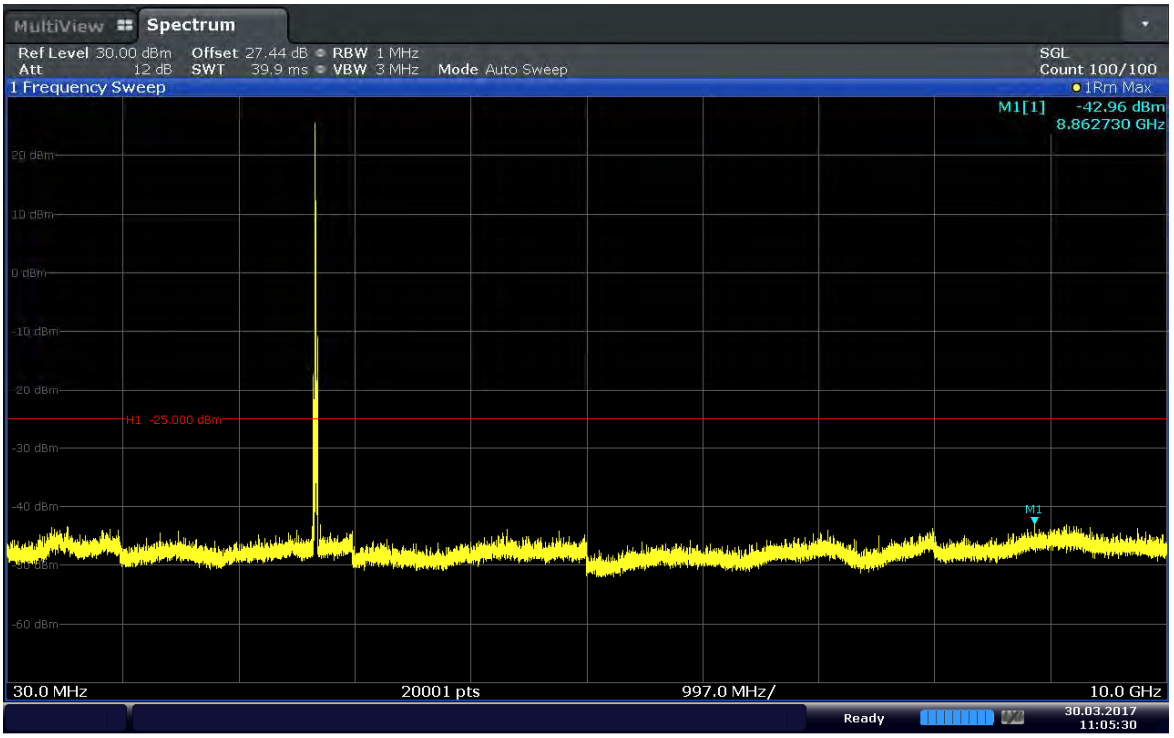
11:01:38 30.03.2017

Plot 6-32. Conducted Spurious Plot (Band 41–10MHz–QPSK– RB Size 1–RB Offset 0–Ch.40620)



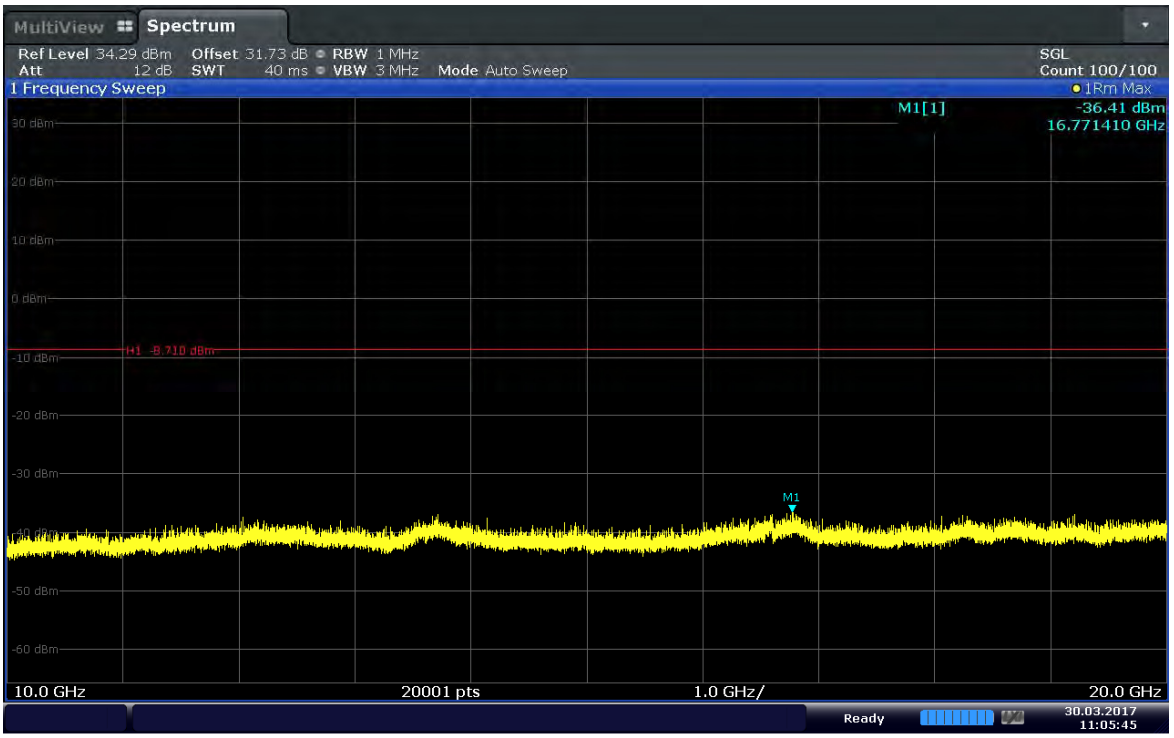
11:01:56 30.03.2017

Plot 6-33. Conducted Spurious Plot (Band 41–10MHz–QPSK– RB Size 1–RB Offset 0–Ch.40620)



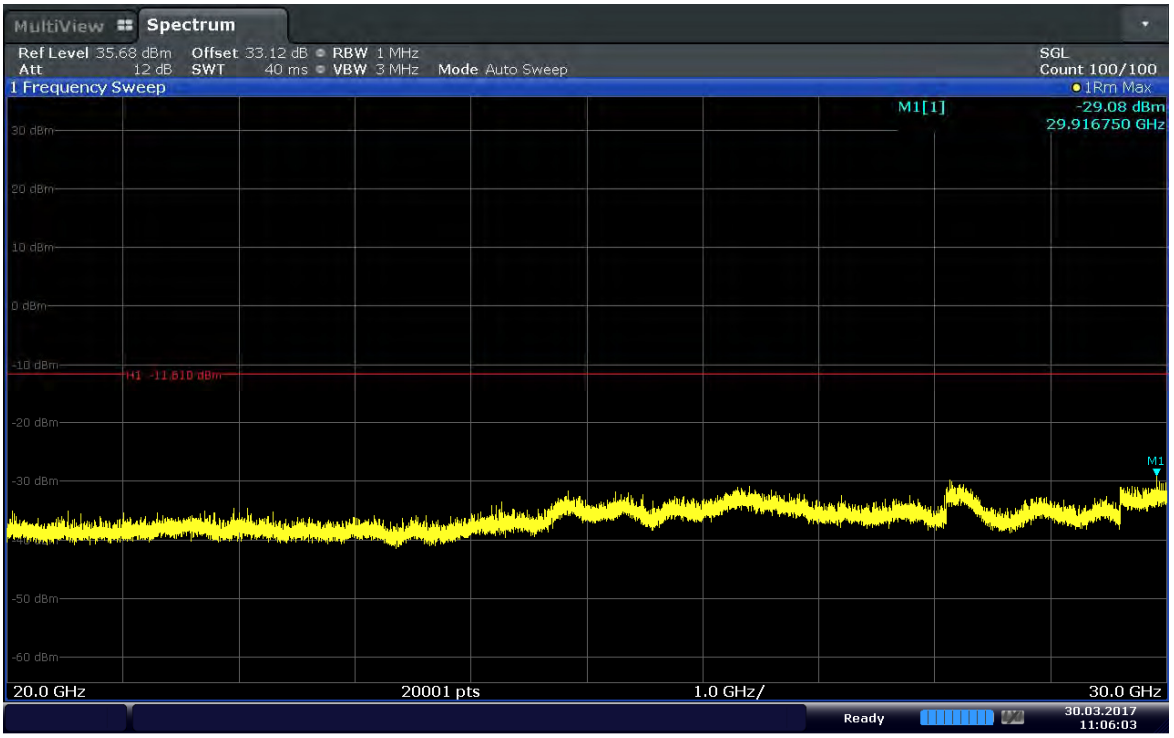
11:05:30 30.03.2017

Plot 6-34. Conducted Spurious Plot (Band 41–10MHz–QPSK–RB Size 1–RB Offset 0–Ch.41540)



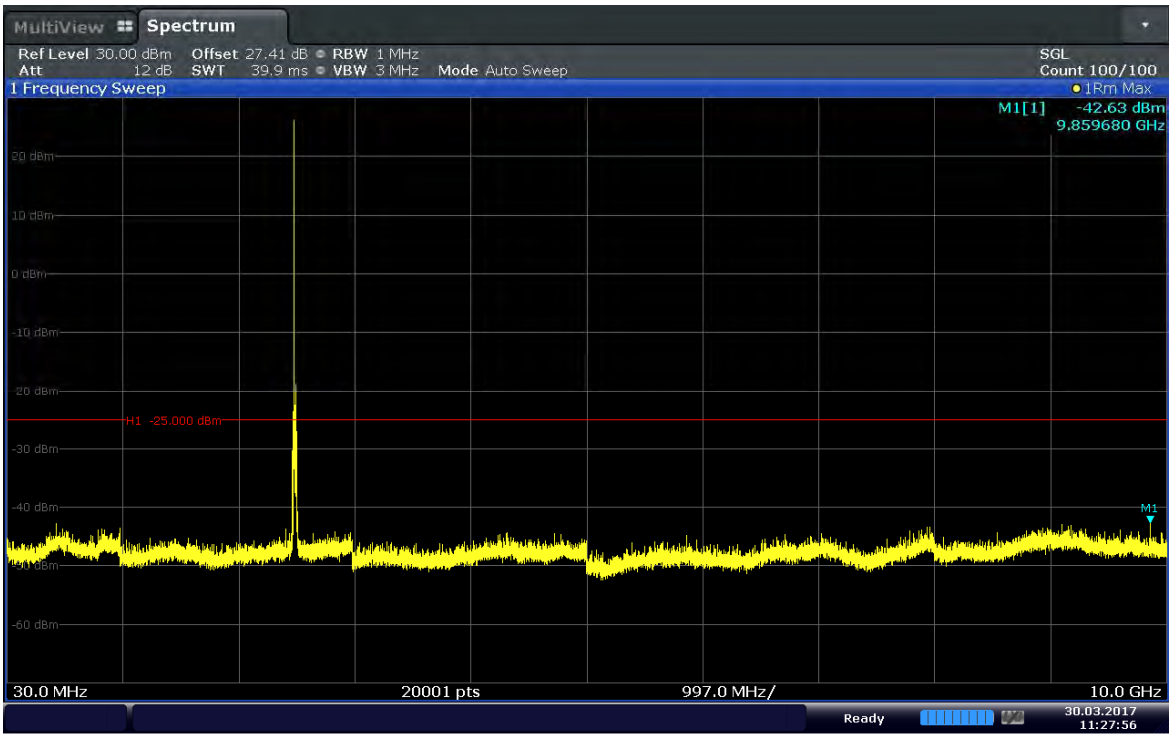
11:05:45 30.03.2017

Plot 6-35. Conducted Spurious Plot (Band 41–10MHz–QPSK– RB Size 1–RB Offset 0–Ch.41540)



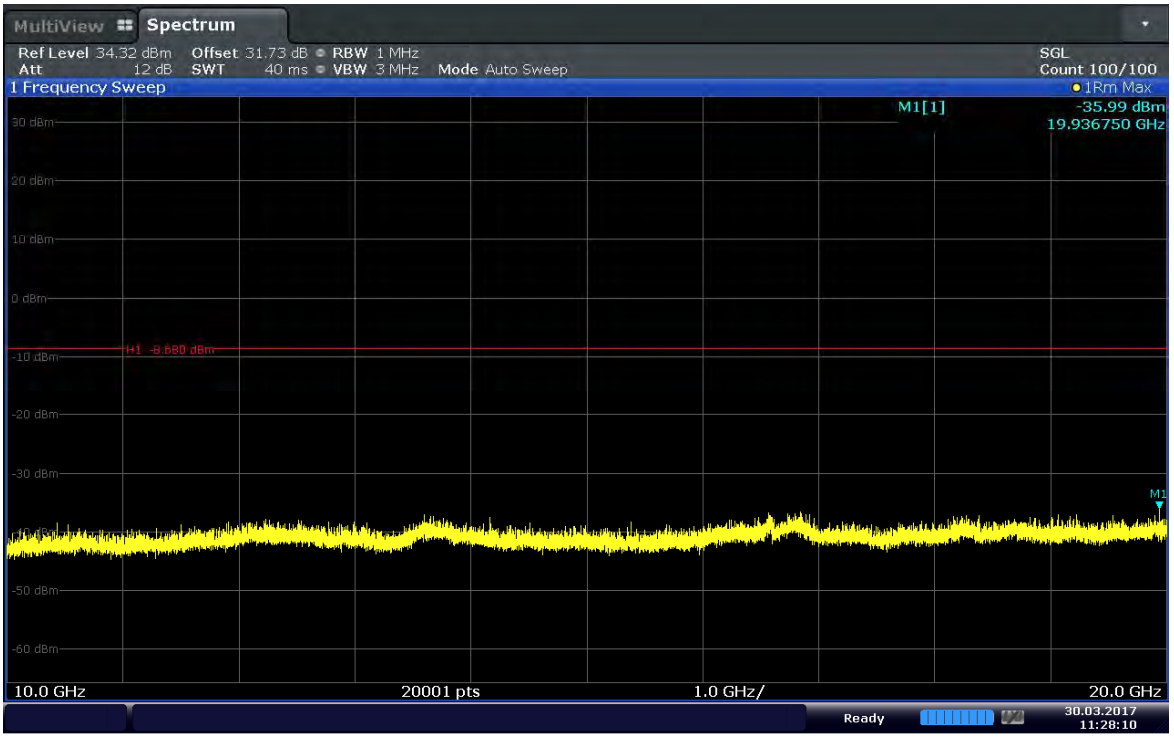
11:06:03 30.03.2017

Plot 6-36. Conducted Spurious Plot (Band 41–10MHz–QPSK– RB Size 1–RB Offset 0–Ch.41540)



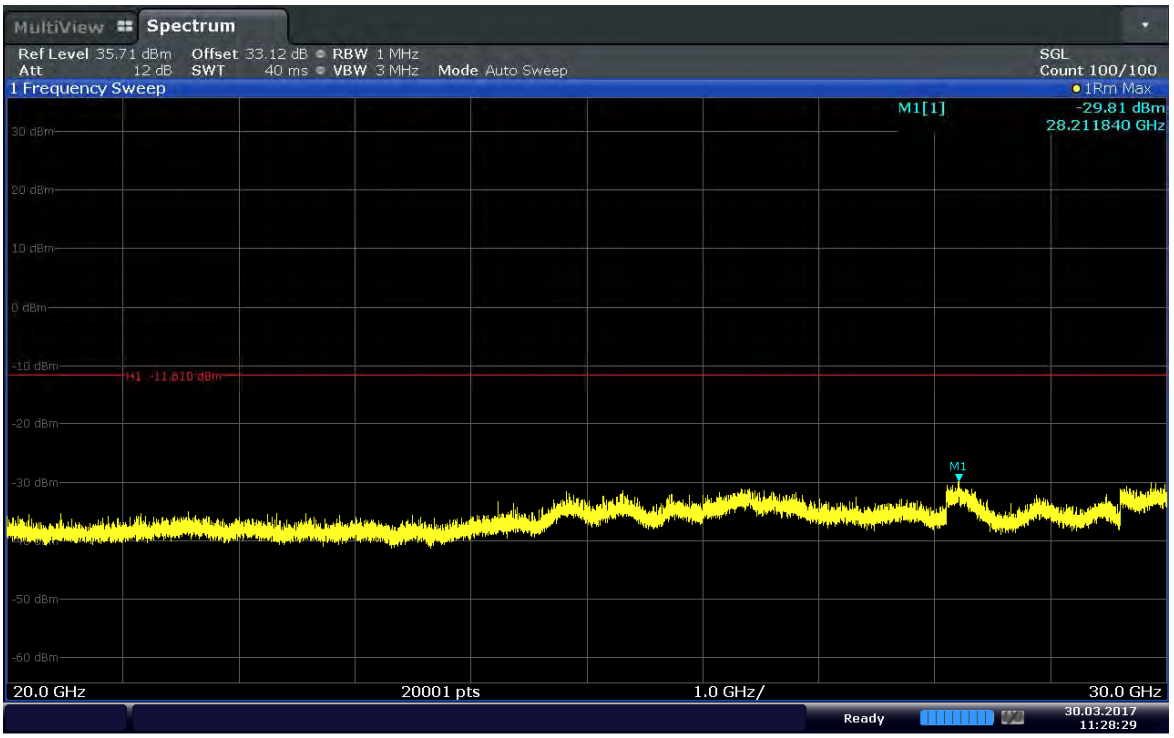
11:27:57 30.03.2017

Plot 6-37. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1–RB Offset 0–Ch.39725)



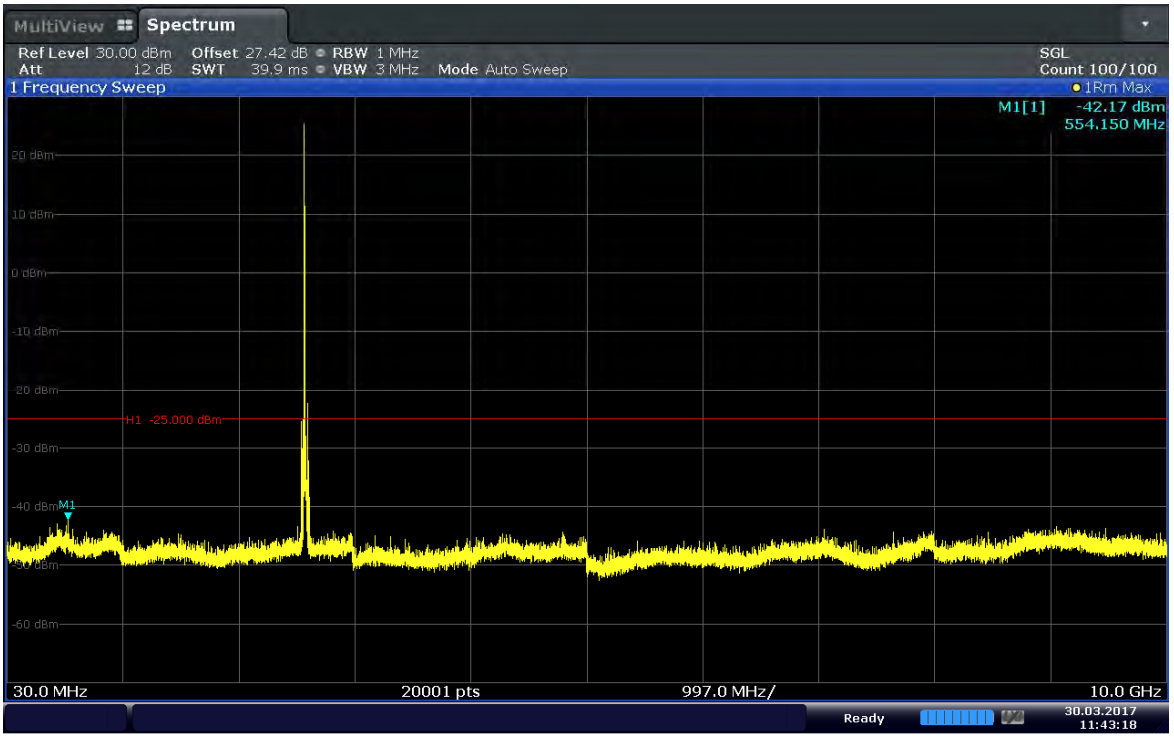
11:28:11 30.03.2017

Plot 6-38. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1–RB Offset 0–Ch.39725)



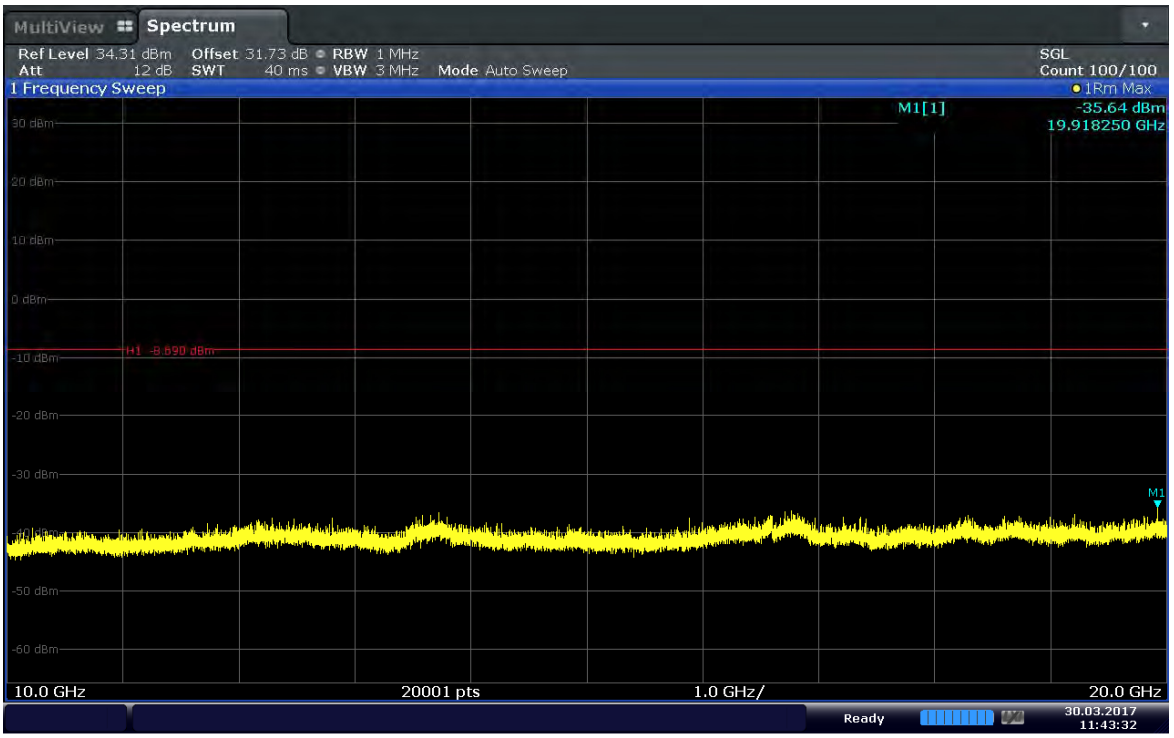
11:28:30 30.03.2017

Plot 6-39. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1–RB Offset 0–Ch.39725)



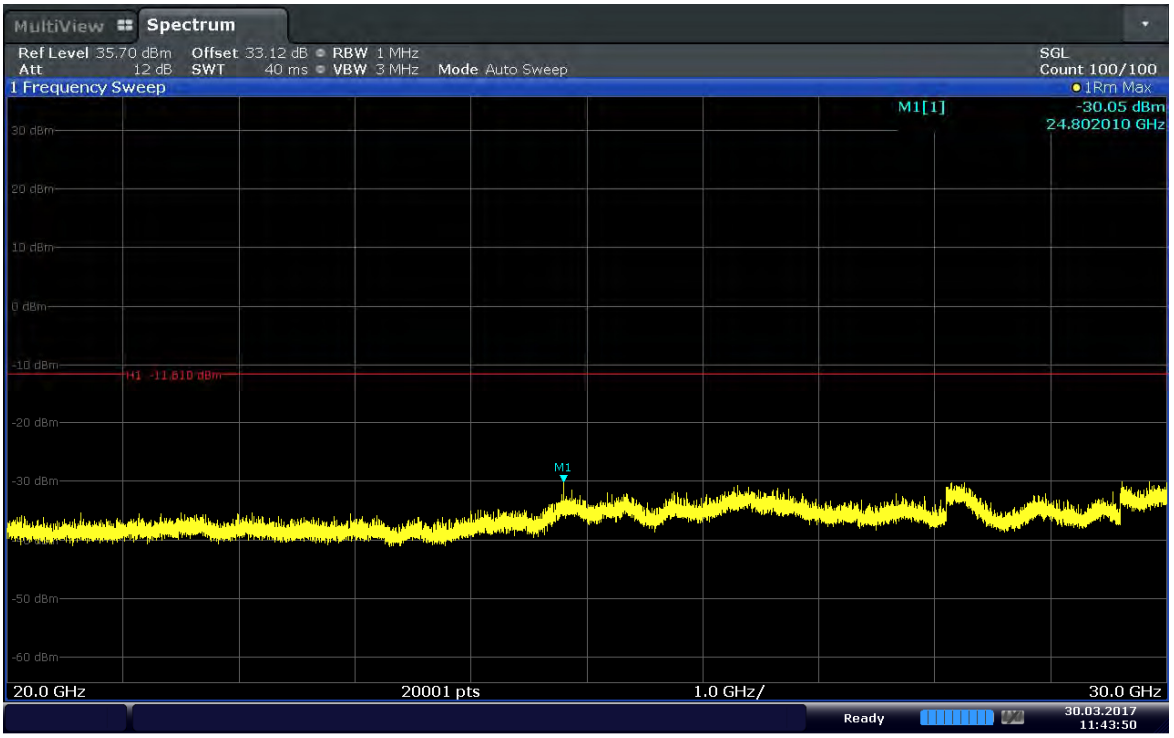
11:43:18 30.03.2017

Plot 6-40. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1–RB Offset 0–Ch.40620)



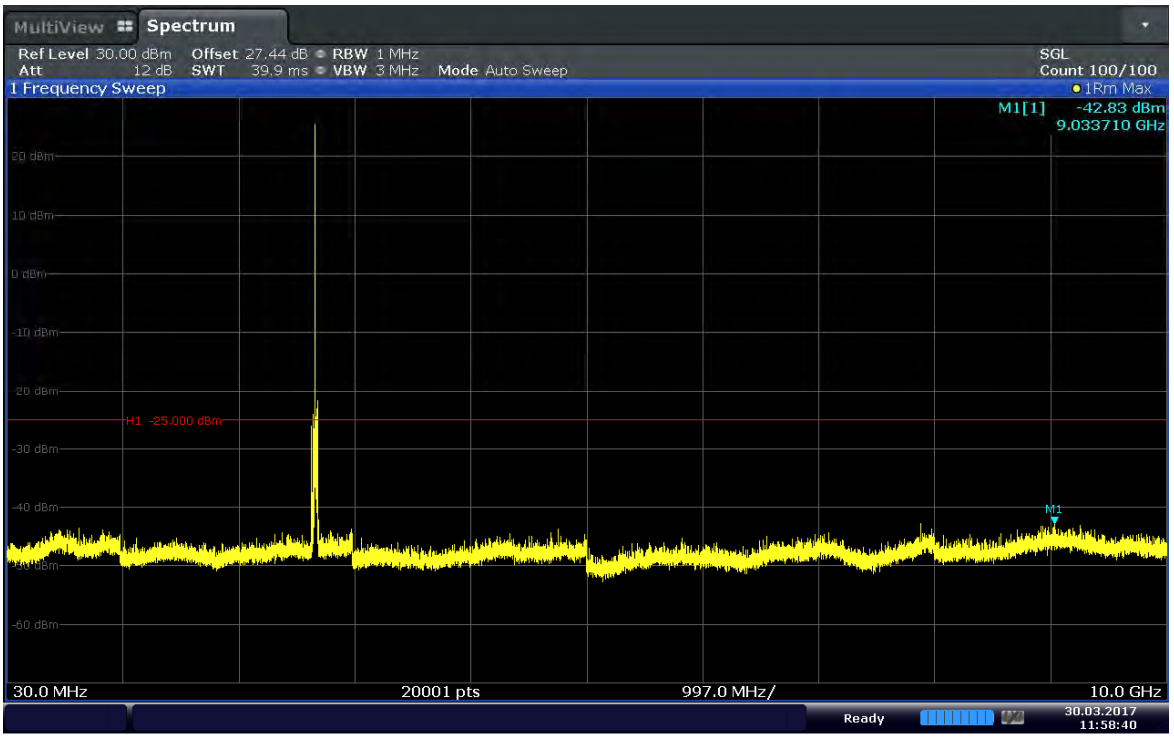
11:43:33 30.03.2017

Plot 6-41. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1–RB Offset 0–Ch.40620)



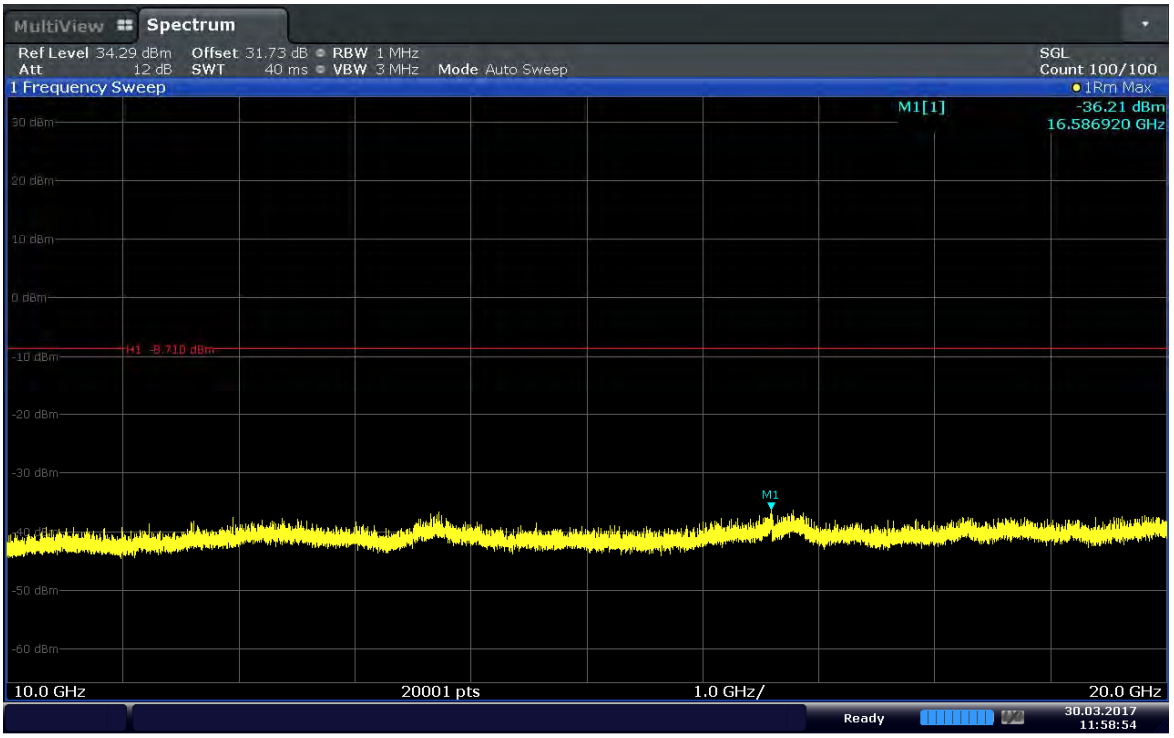
11:43:51 30.03.2017

Plot 6-42. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1–RB Offset 0–Ch.40620)



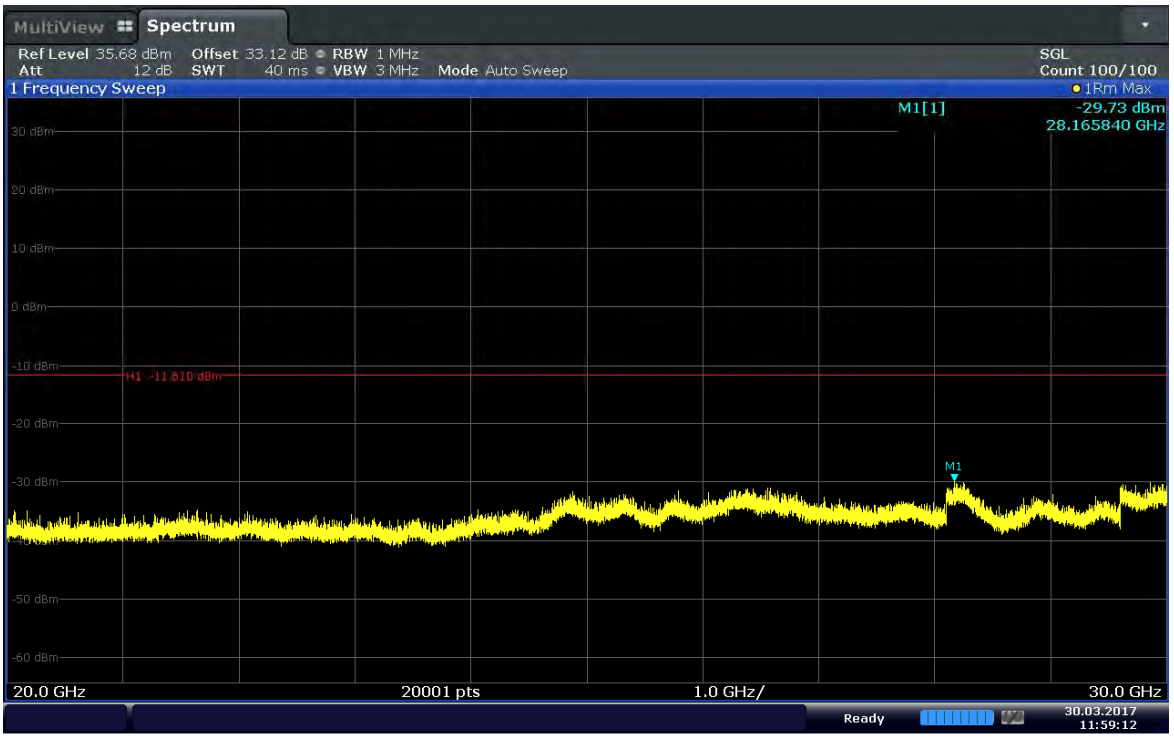
11:58:40 30.03.2017

Plot 6-43. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1–RB Offset 0–Ch.41515)



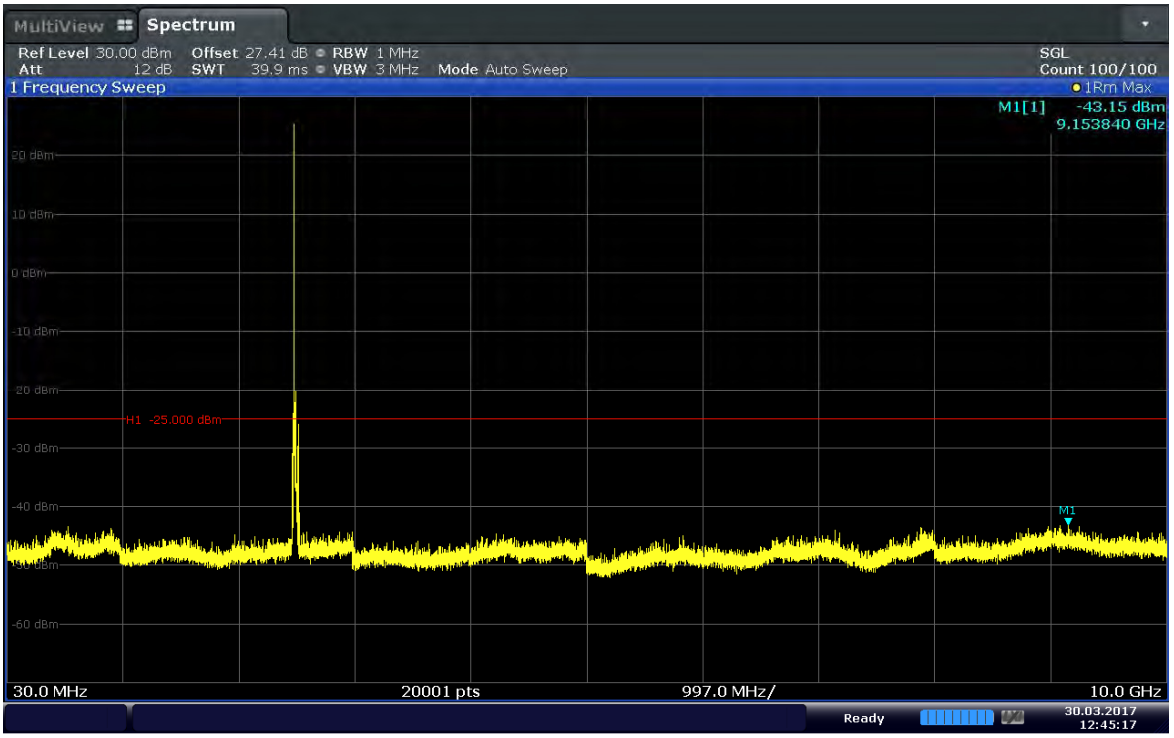
11:58:55 30.03.2017

Plot 6-44. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1– RB Offset 0–Ch.41515)



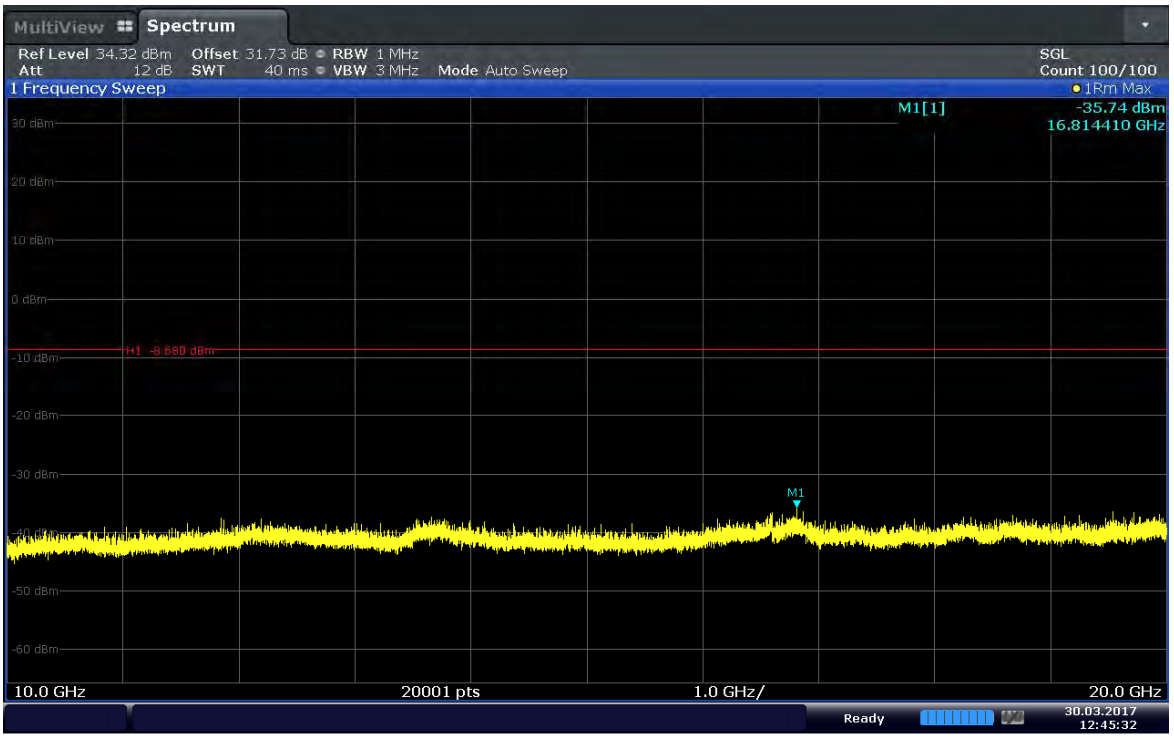
11:59:13 30.03.2017

Plot 6-45. Conducted Spurious Plot (Band 41–15MHz–QPSK–RB Size 1– RB Offset 0–Ch.41515)



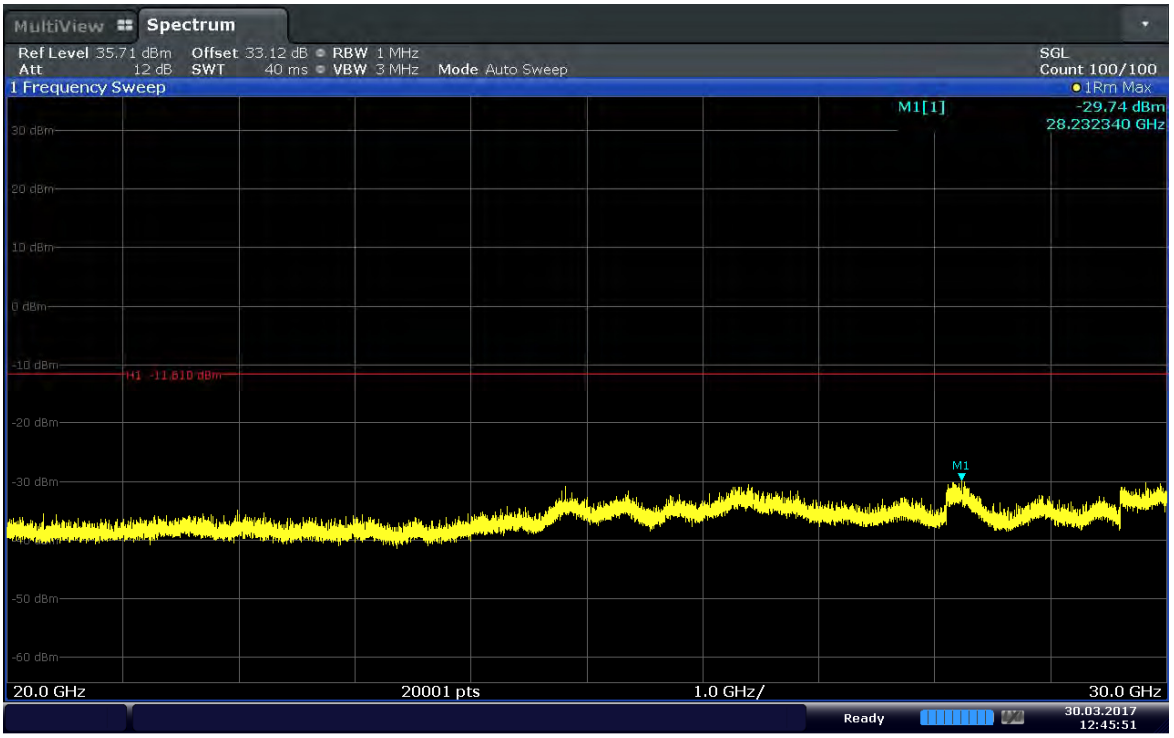
12:45:18 30.03.2017

Plot 6-46. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1–RB Offset 0–Ch.39750)



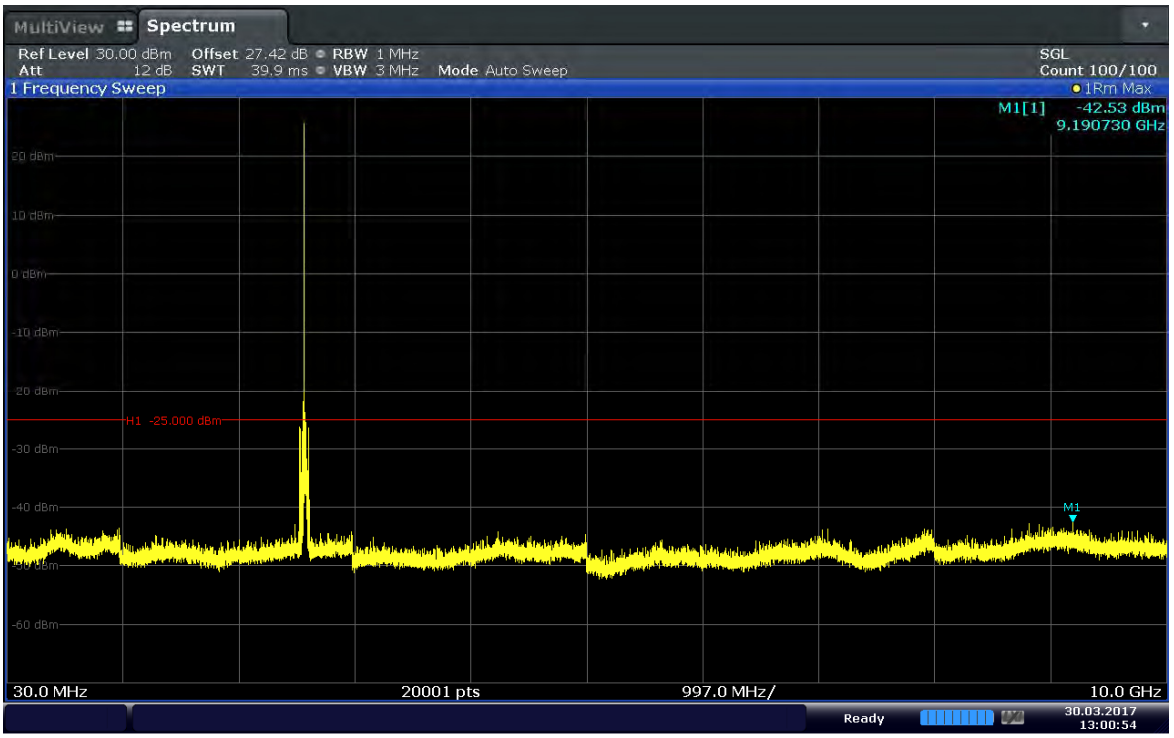
12:45:33 30.03.2017

Plot 6-47. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1– RB Offset 0–Ch.39750)



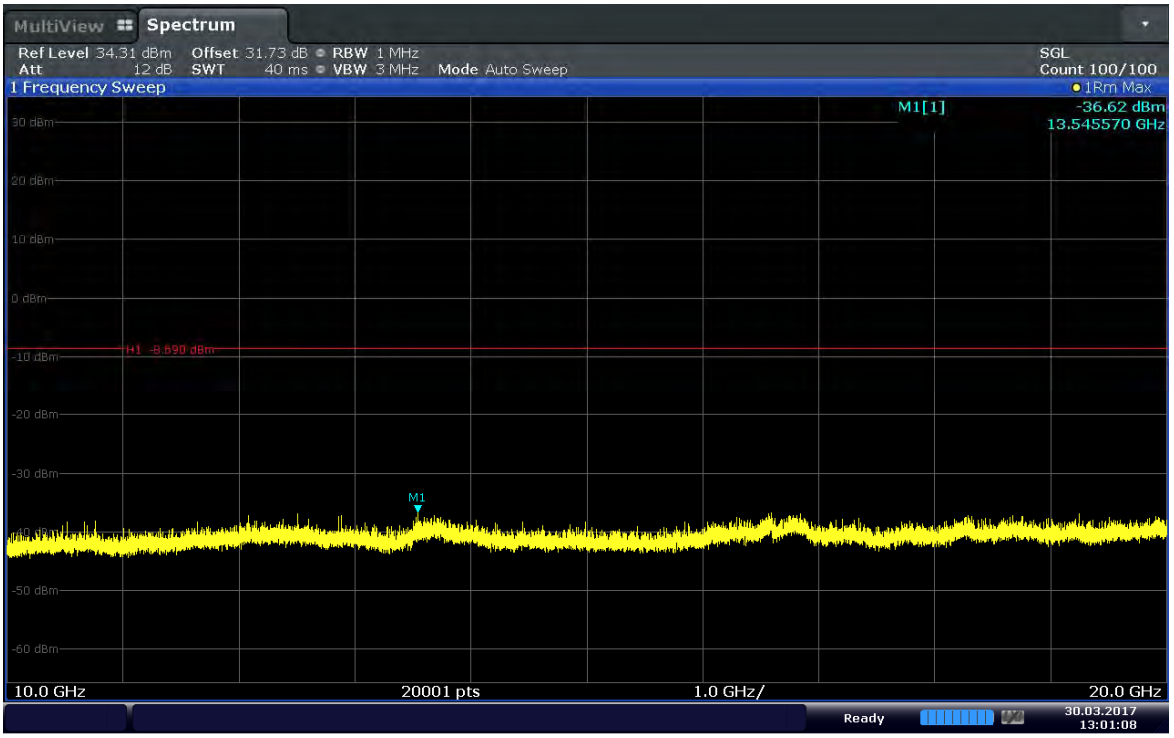
12:45:51 30.03.2017

Plot 6-48. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1– RB Offset 0–Ch.39750)



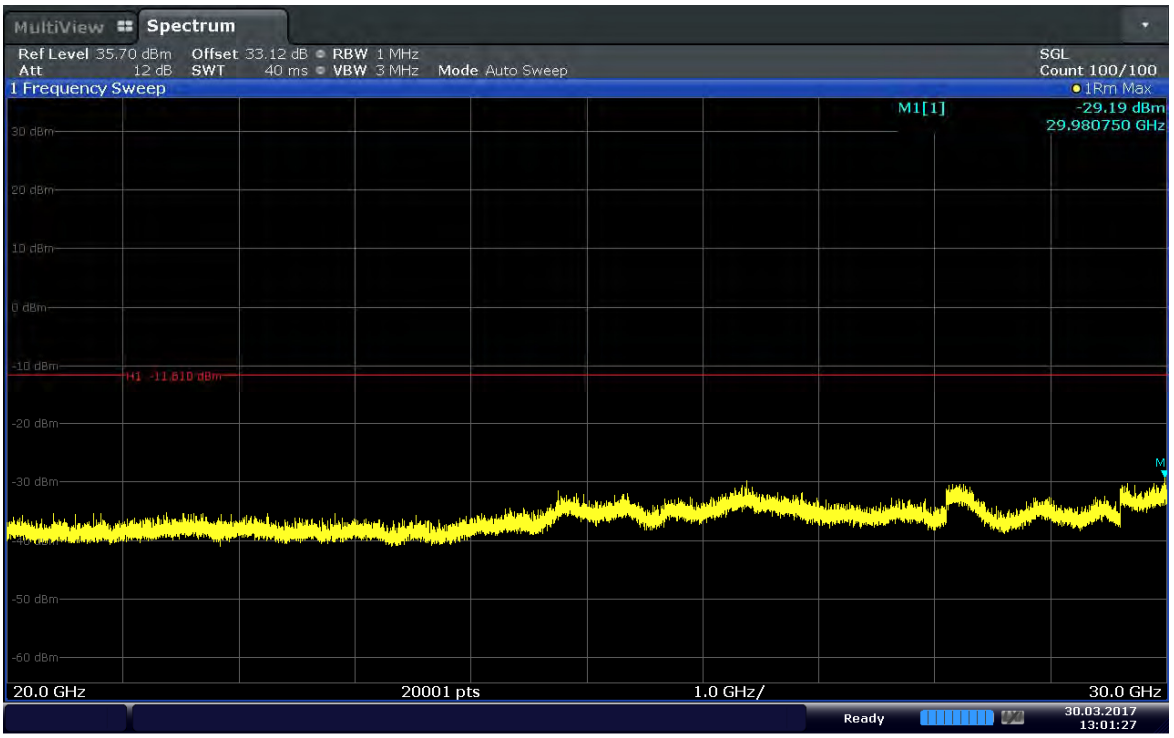
13:00:54 30.03.2017

Plot 6-49. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1–RB Offset 0–Ch.40620)



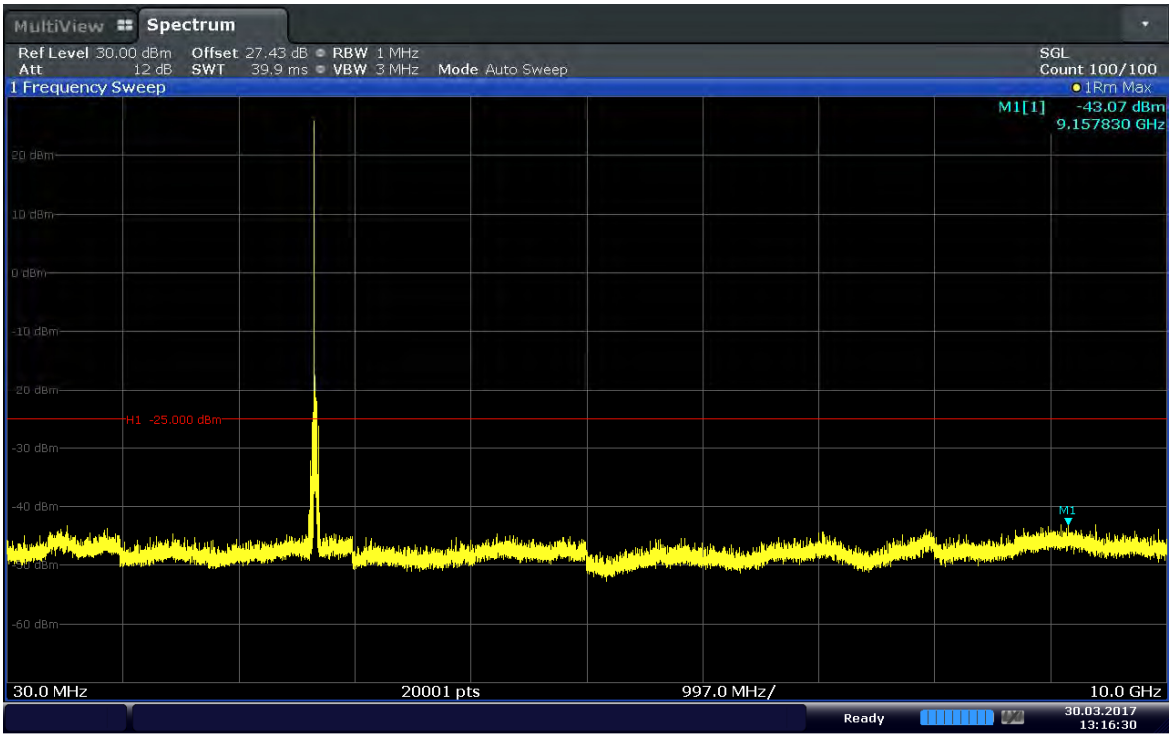
13:01:09 30.03.2017

Plot 6-50. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1– RB Offset 0–Ch.40620)



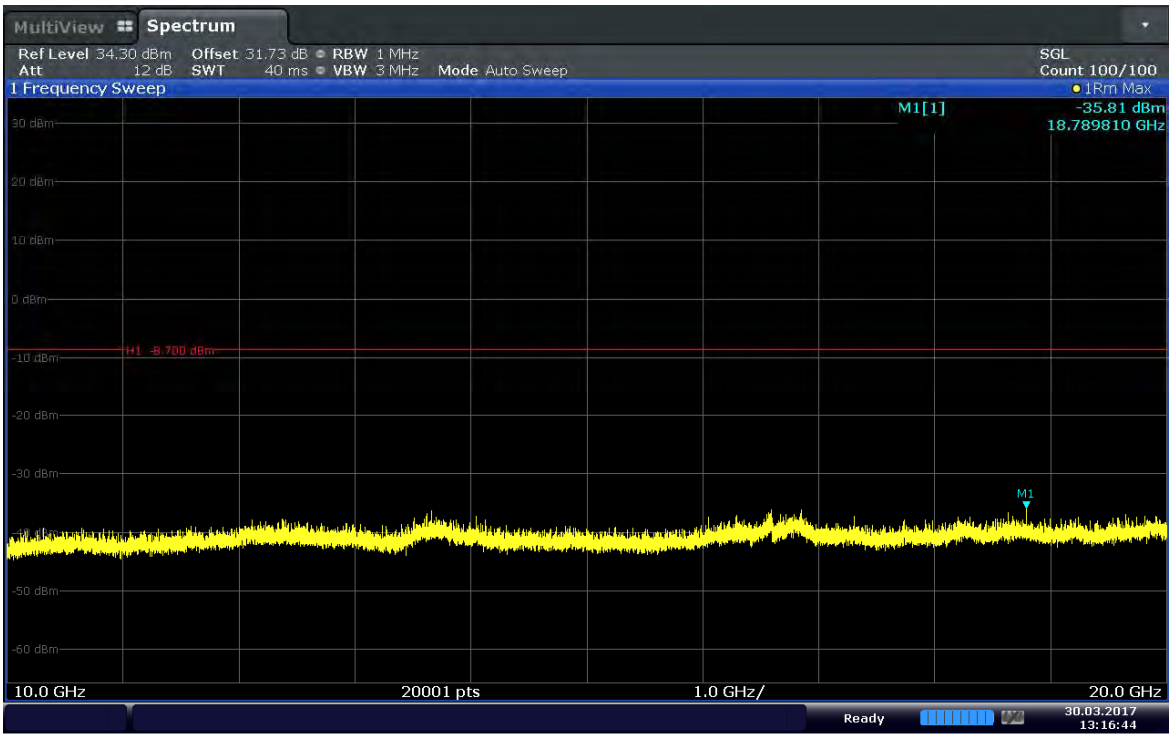
13:01:27 30.03.2017

Plot 6-51. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1– RB Offset 0–Ch.40620)



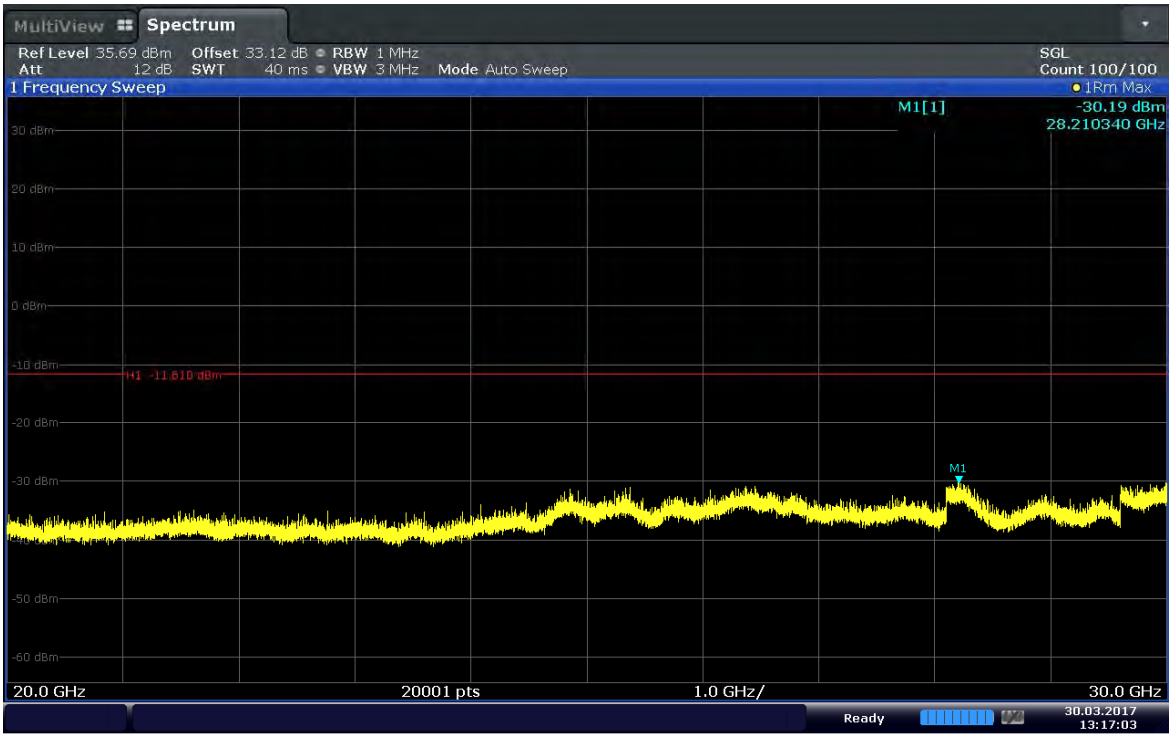
13:16:31 30.03.2017

Plot 6-52. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1–RB Offset 0–Ch.41490)



13:16:45 30.03.2017

Plot 6-53. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1– RB Offset 0–Ch.41490)



13:17:03 30.03.2017

Plot 6-54. Conducted Spurious Plot (Band 41–20MHz–QPSK–RB Size 1– RB Offset 0–Ch.41490)

6.4. Band Edge Emissions at Antenna Terminal
§2.1051 §27.53(g) §27.53(m)

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level is > 40 + $10\log_{10}$(P[Watts]) between channel edge and 5 MHz from the channel edge, > 43 + $10\log_{10}$(P[Watts]) between 5 MHz and X MHz from the channel edge, or between 2490.5 MHz and 2496 MHz, and > 55 + 10log10 (P[Watts]) more than X MHz from the channel edge, or below 2490.5 MHz, where X is the grater of 6 MHz or the actual emission bandwidth.

Test Procedure Used

KDB 971168 v02r02 – Section 6.0

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot.
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. Please see test note below for RBW settings
4. VBW ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

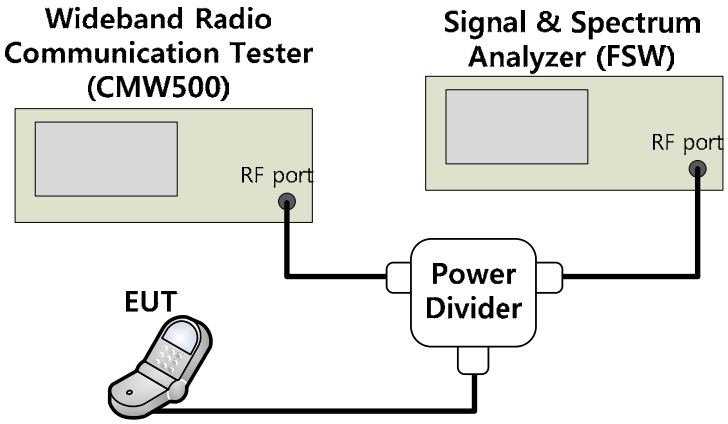

Figure 6-3. Test Instruments & Measurement Setup

Test Note

1. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

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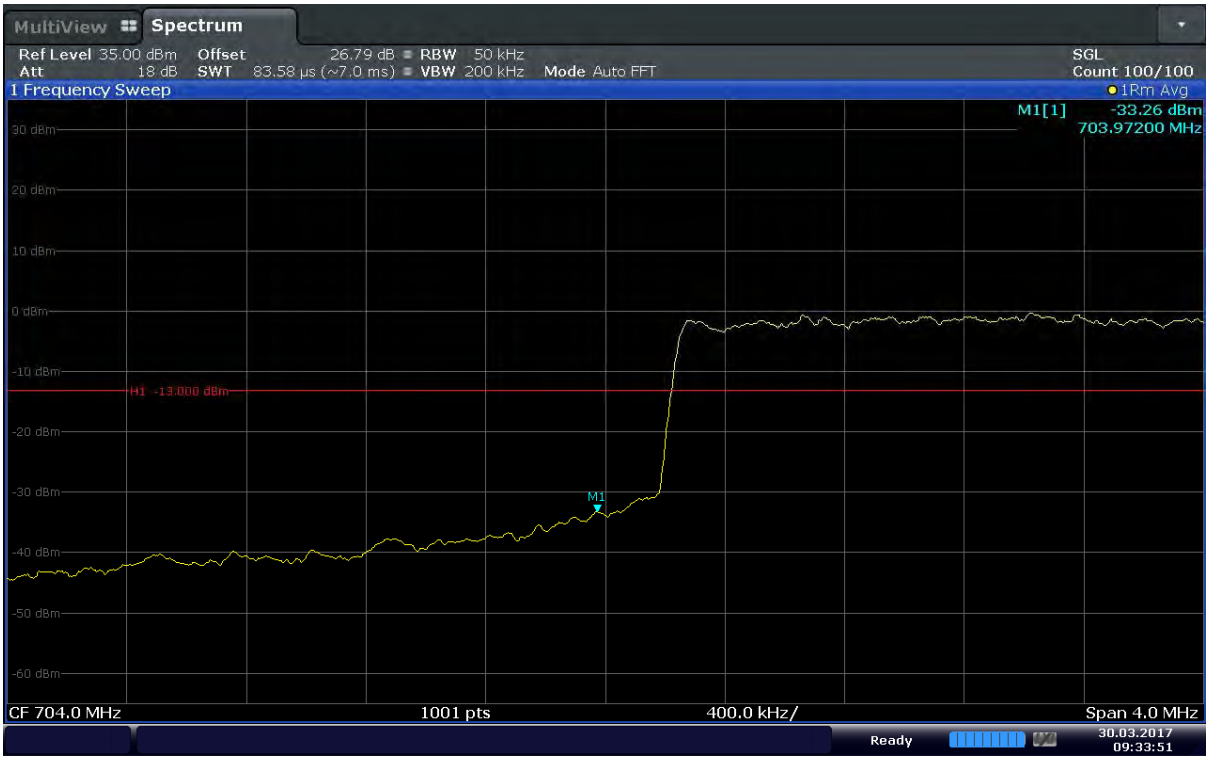
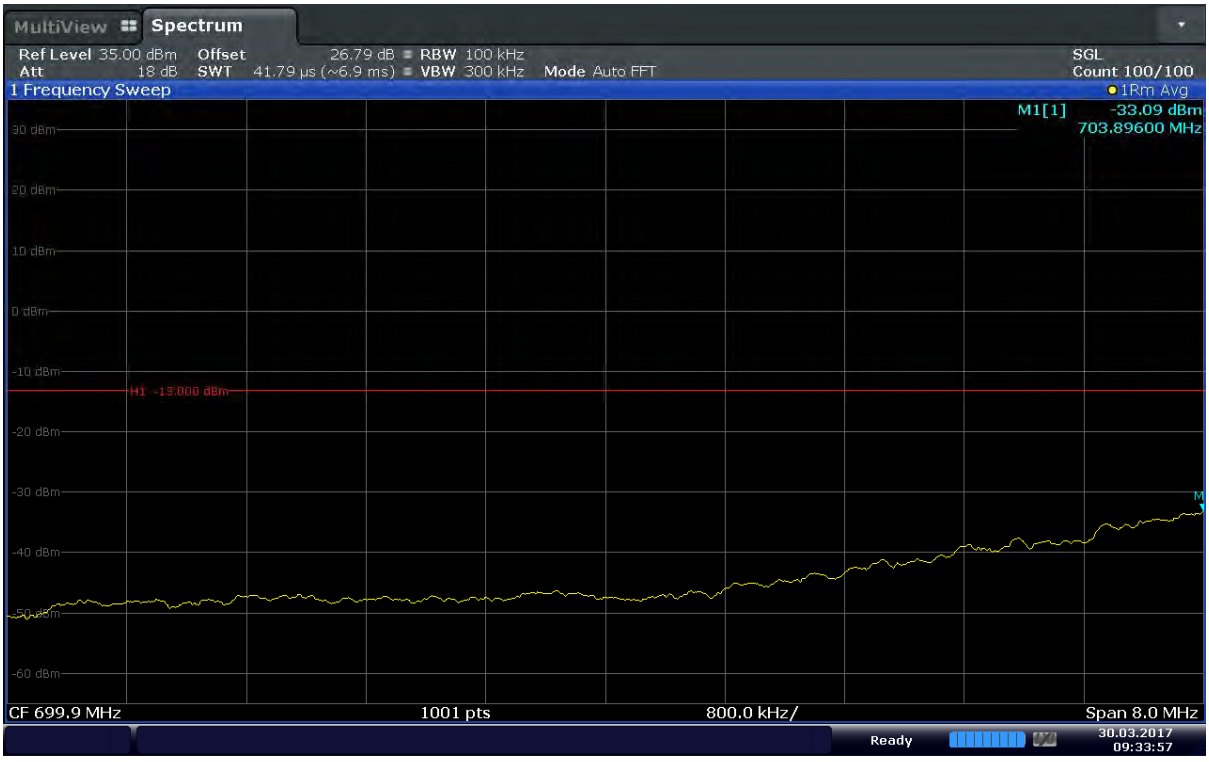
Test Plots



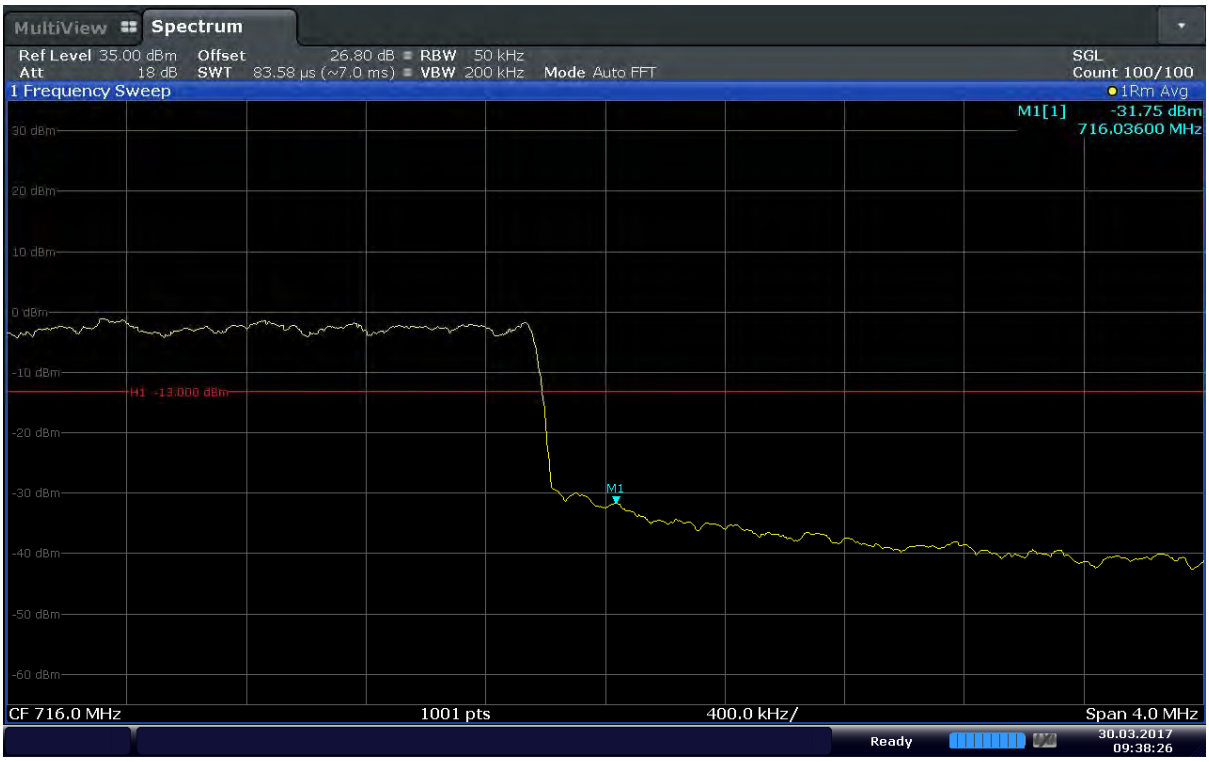
09:33:51 30.03.2017

Plot 6-55. Lower Band Edge Plot (Band17 – 5MHz – QPSK – RB Size 25)



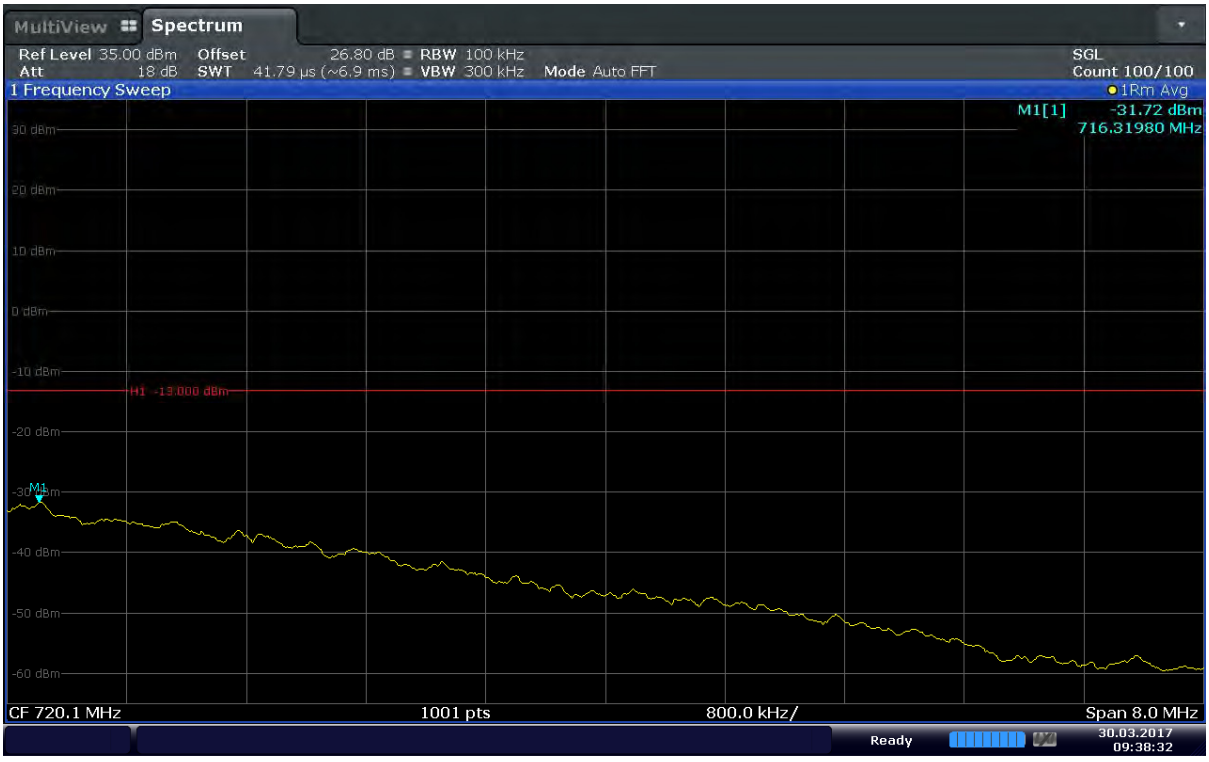
09:33:57 30.03.2017

Plot 6-56. Extended Lower Band Edge Plot (Band17 – 5MHz – QPSK – RB Size 25)



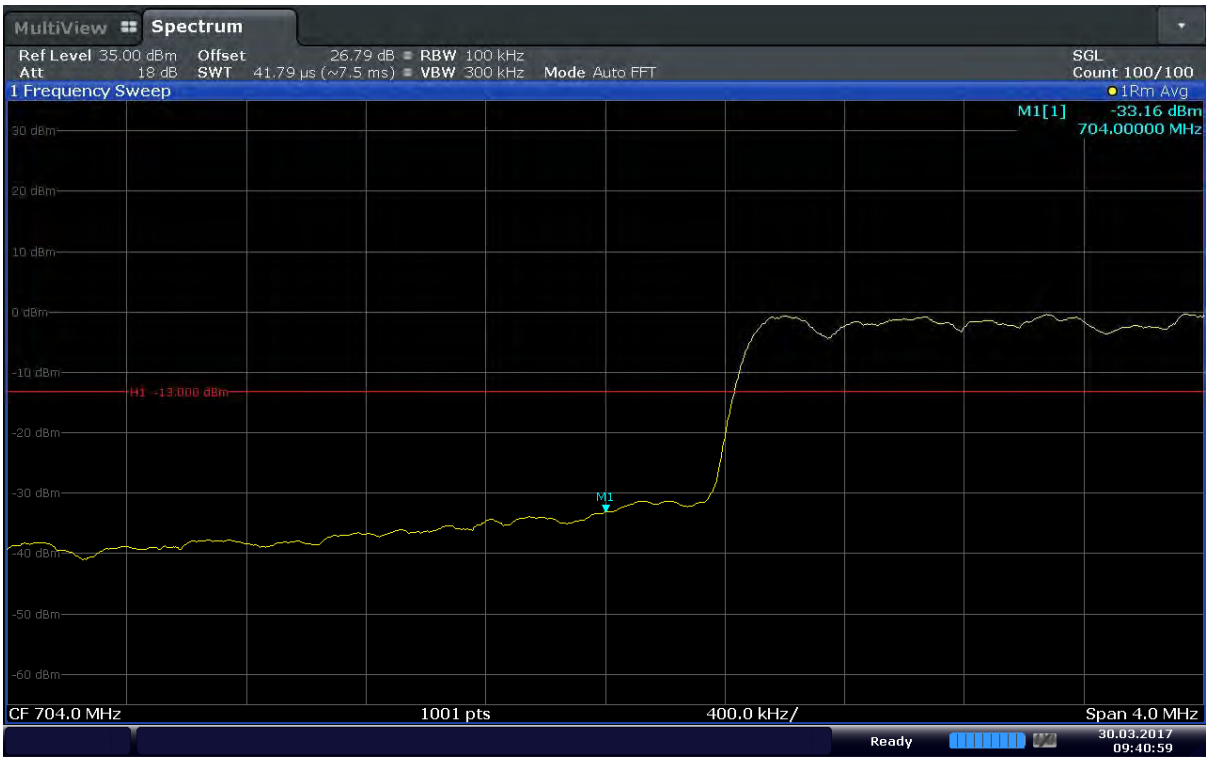
09:38:27 30.03.2017

Plot 6-57. Upper Band Edge Plot (Band17 – 5MHz – QPSK – RB Size 25)



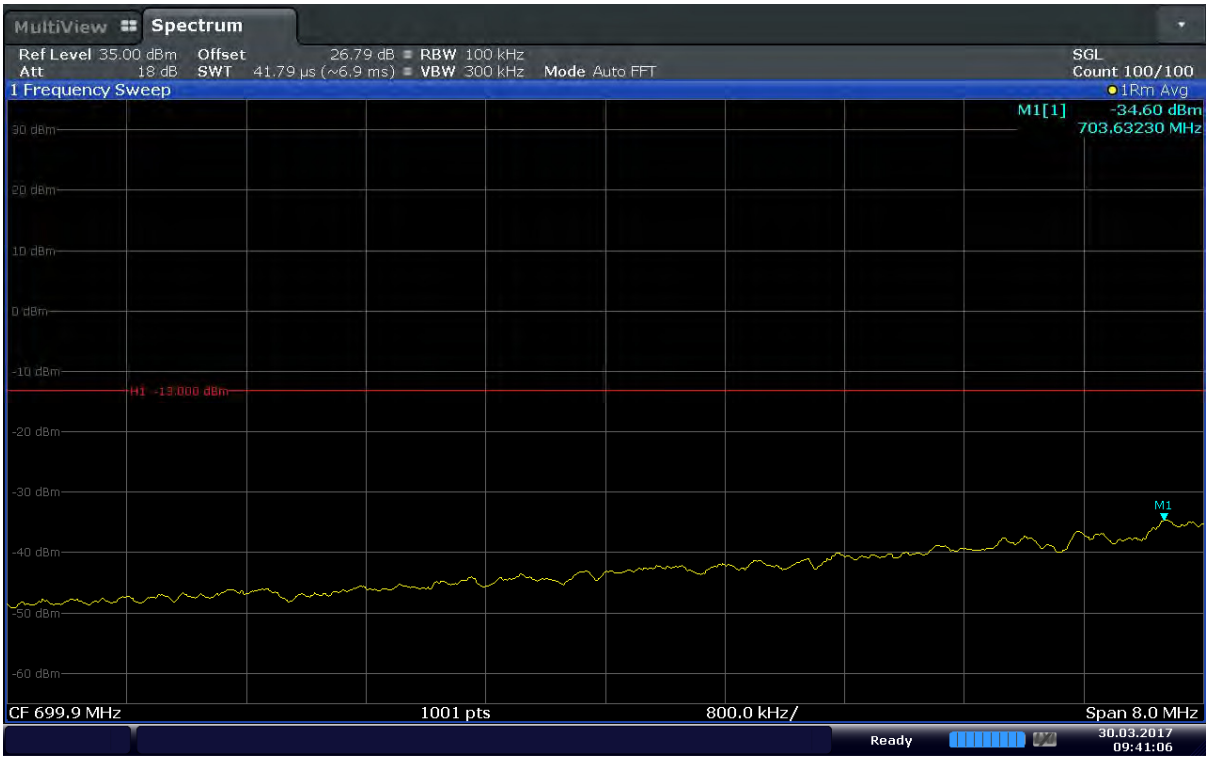
09:38:33 30.03.2017

Plot 6-58. Extended Upper Band Edge Plot (Band17 – 5MHz – QPSK – RB Size 25)



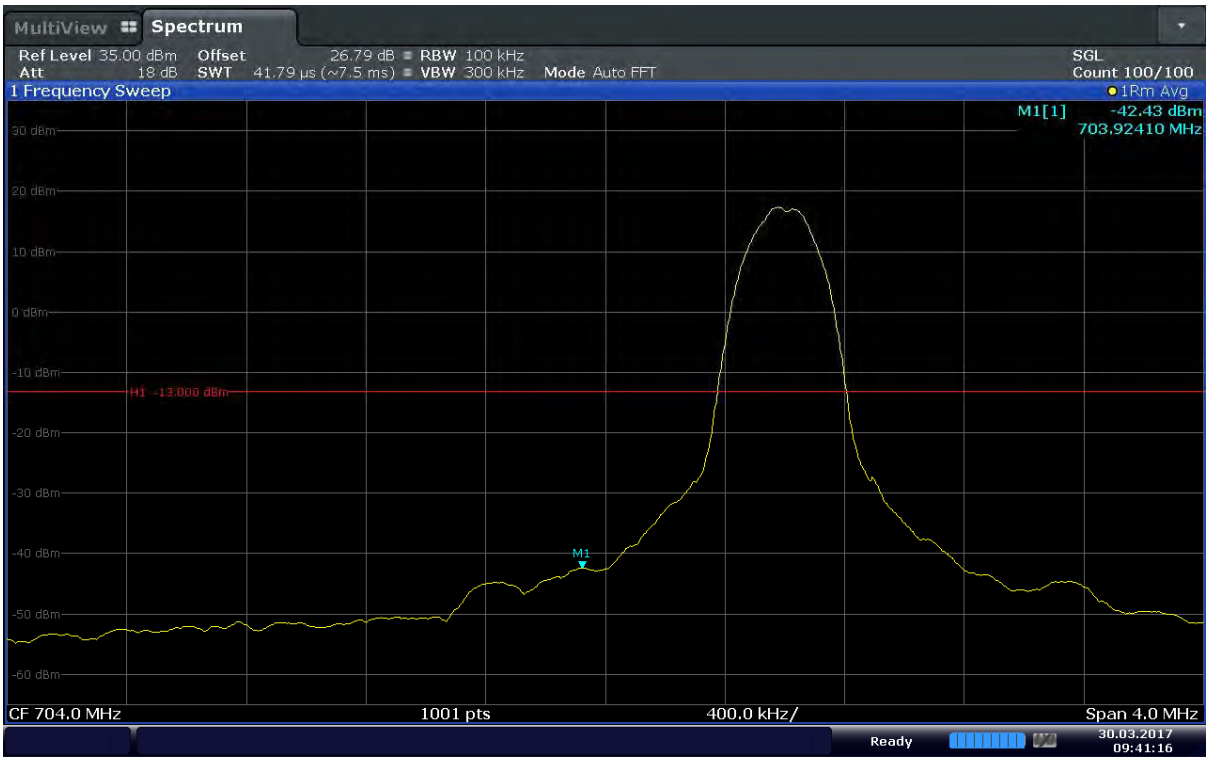
09:41:00 30.03.2017

Plot 6-59. Lower Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 50)



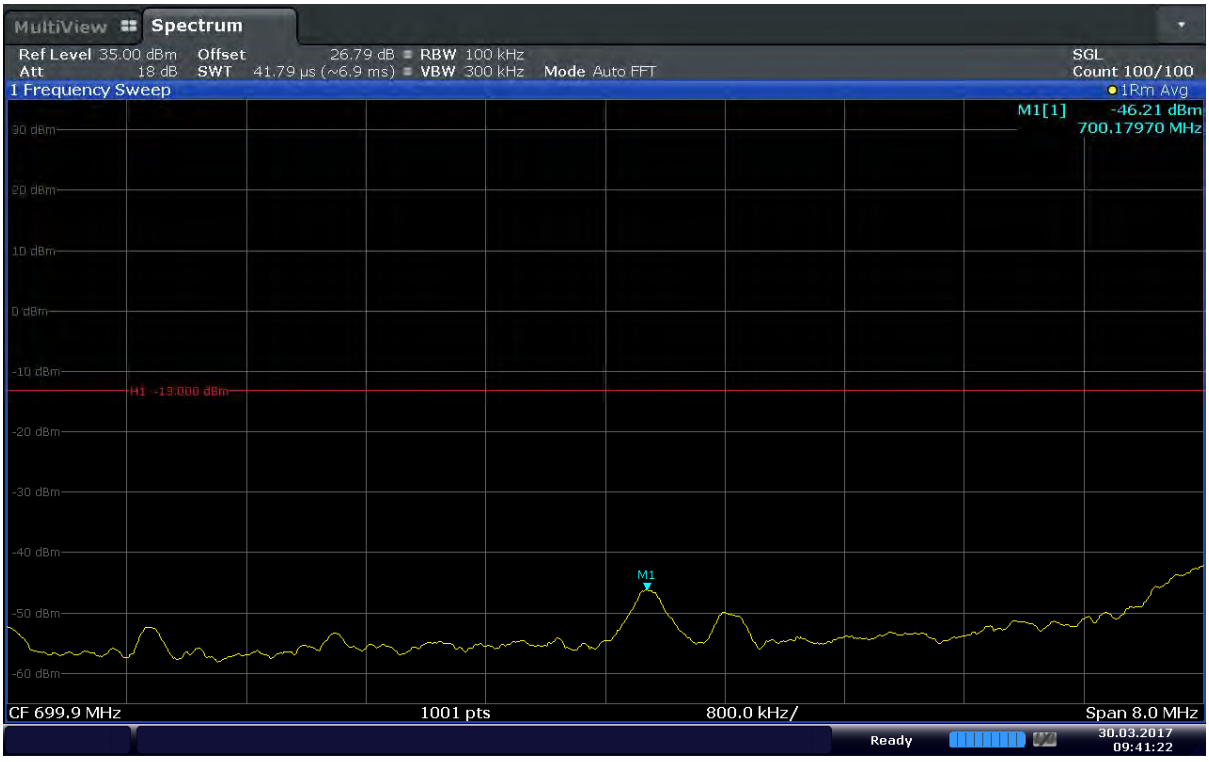
09:41:06 30.03.2017

Plot 6-60. Extended Lower Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 50)



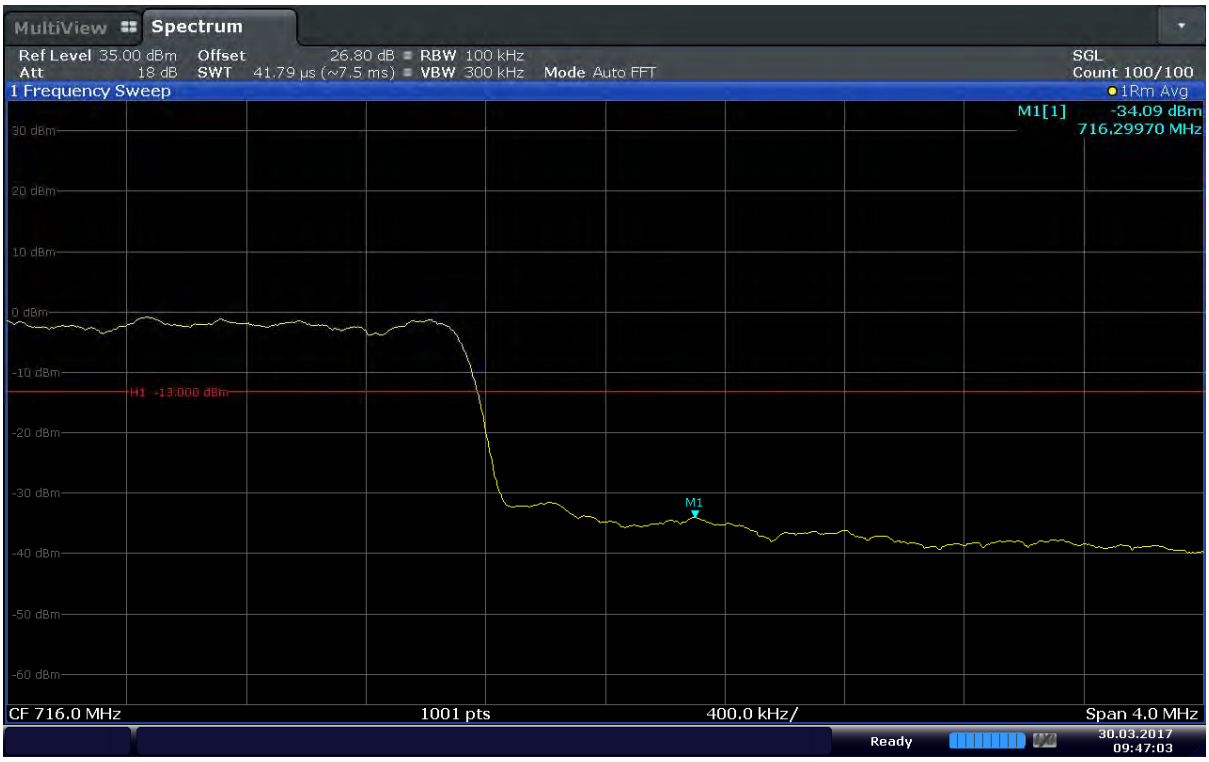
09:41:16 30.03.2017

Plot 6-61. Lower Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 1 – RB Offset 0)



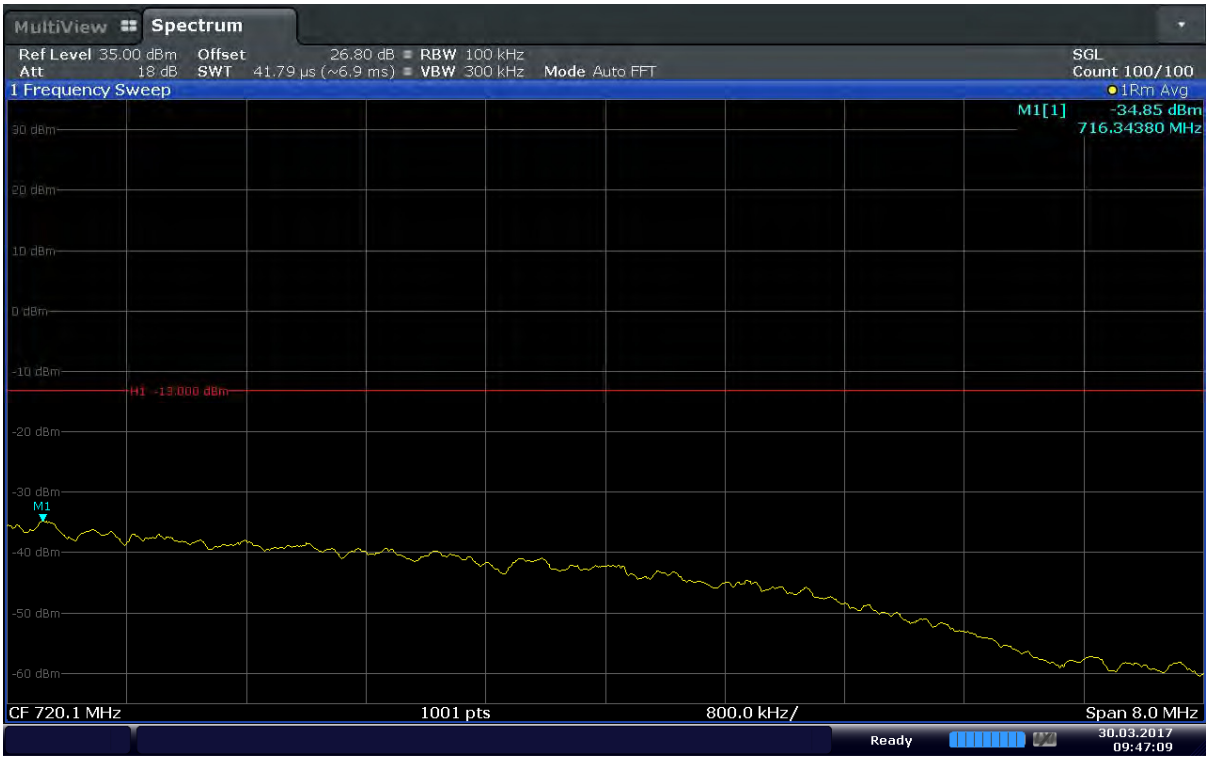
09:41:22 30.03.2017

Plot 6-62. Extended Lower Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 1 – RB Offset 0)



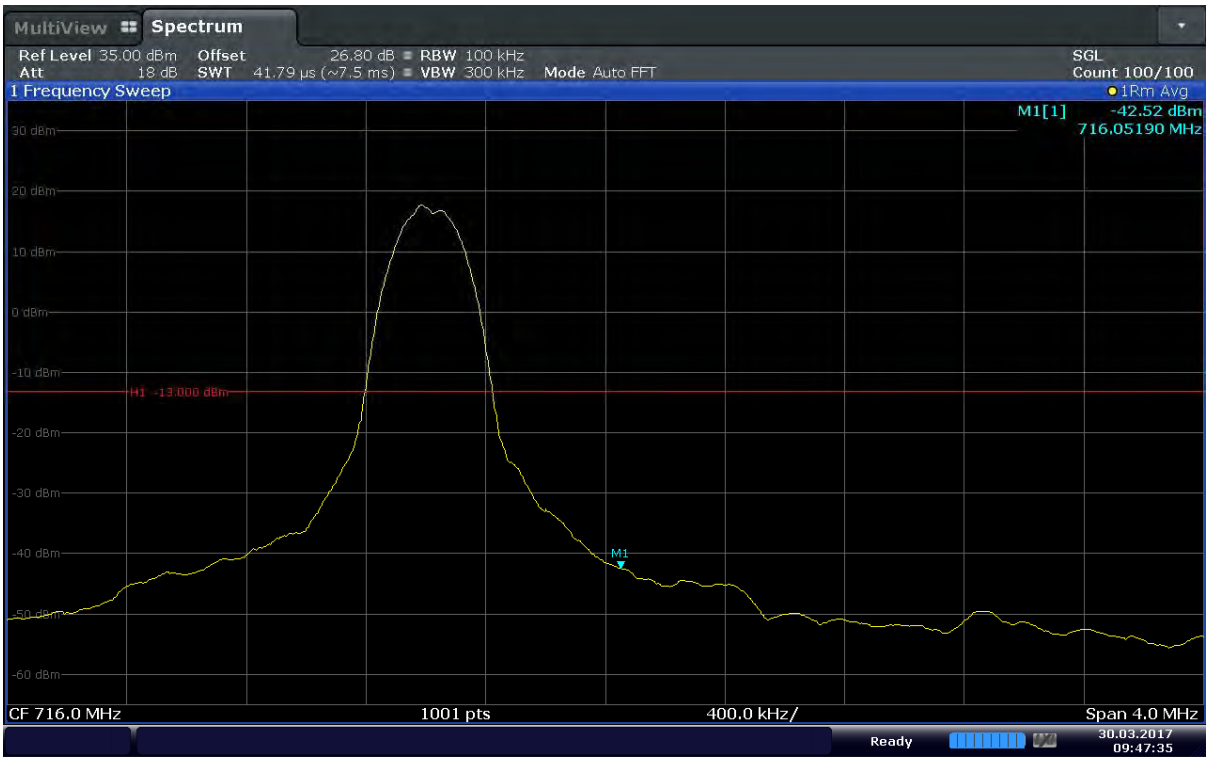
09:47:04 30.03.2017

Plot 6-63. Upper Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 50)



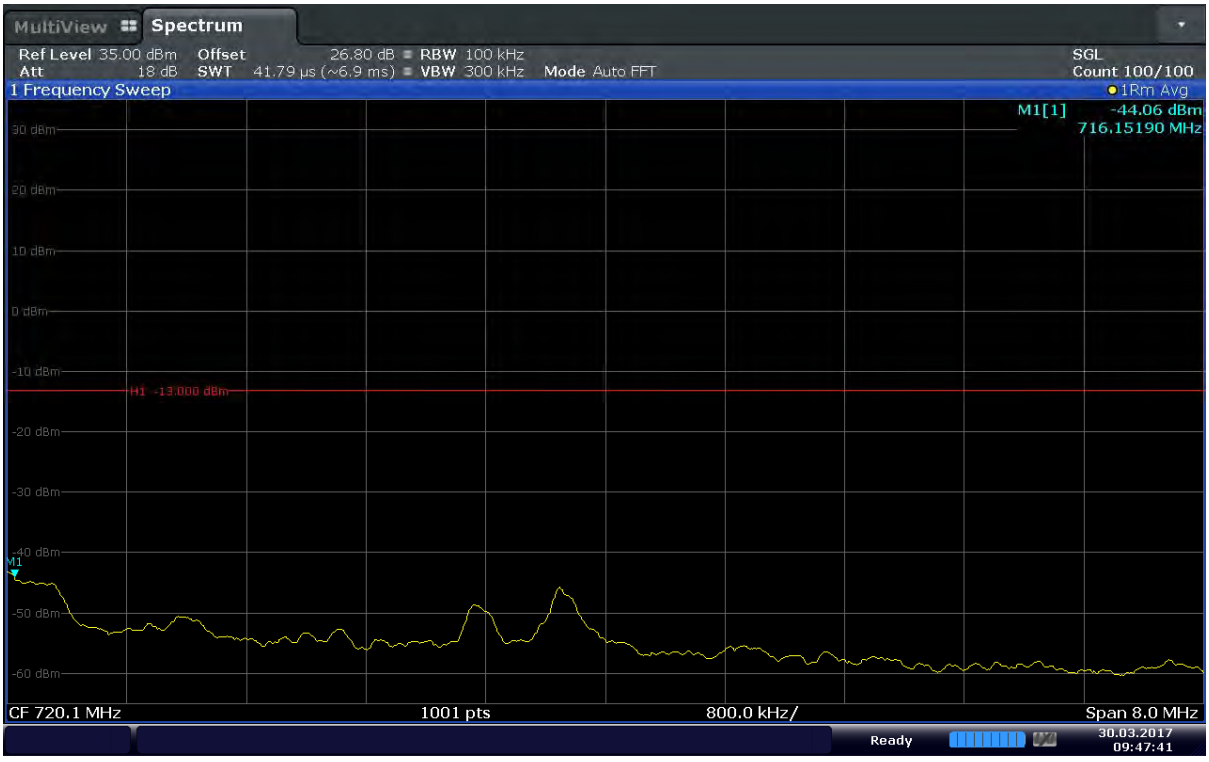
09:47:10 30.03.2017

Plot 6-64. Extended Upper Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 50)



09:47:36 30.03.2017

Plot 6-65. Upper Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 1 – RB Offset 49)



09:47:42 30.03.2017

Plot 6-66. Extended Upper Band Edge Plot (Band17 – 10MHz – QPSK – RB Size 1 – RB Offset 49)

17:19:57 14.04.2017

Plot 6-67. Lower Band Edge Plot (Band41 – 5MHz – QPSK – RB Size 25 – Ch.39675)

17:15:45 14.04.2017

Plot 6-68. Upper Band Edge Plot (Band41 – 5MHz – QPSK – RB Size 25 – Ch.41565)

17:23:21 14.04.2017

Plot 6-69. Lower Band Edge Plot (Band41 – 10MHz – QPSK – RB Size 50 – Ch.39700)

17:14:24 14.04.2017

Plot 6-70. Upper Band Edge Plot (Band41 – 10MHz – QPSK – RB Size 50 – Ch.41540)

17:24:38 14.04.2017

Plot 6-71. Lower Band Edge Plot (Band41 – 15MHz – QPSK – RB Size 75 – Ch.39725)

17:13:06 14.04.2017

Plot 6-72. Upper Band Edge Plot (Band41 – 15MHz – QPSK – RB Size 75 – Ch.41515)

17:26:22 14.04.2017

Plot 6-73. Lower Band Edge Plot (Band41 – 20MHz – QPSK – RB Size 100 – Ch.39750)

17:10:54 14.04.2017

Plot 6-74. Upper Band Edge Plot (Band41 – 20MHz – QPSK – RB Size 100 – Ch.41490)

17:28:08 14.04.2017

Plot 6-75. Lower Band Edge Plot (Band41 – 20MHz – QPSK – RB Size 1 – RB Offset 0 – Ch.39750)

17:11:41 14.04.2017

Plot 6-76. Upper Band Edge Plot (Band41 – 20MHz – QPSK – RB Size 1 – RB Offset 99 – Ch.41490)

6.5. Frequency Stability / Temperature Variation
§2.1055 §27.54

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. The frequency stability of the transmitter is measured by:

1. Temperature: The temperature is varied from -30℃ to +50℃ in 10℃ increments using an environmental chamber.

2. Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for other than hand carried battery equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point(=Batt.End) which shall be specified by the manufacturer.

For part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-D-2010

Test Settings

1. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

2. Frequency measurements are made at 10℃ intervals ranging from -30℃ to +50℃. A period of time sufficient to stabilize EUT at each temperature level shall be allowed prior to frequency measurement.

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

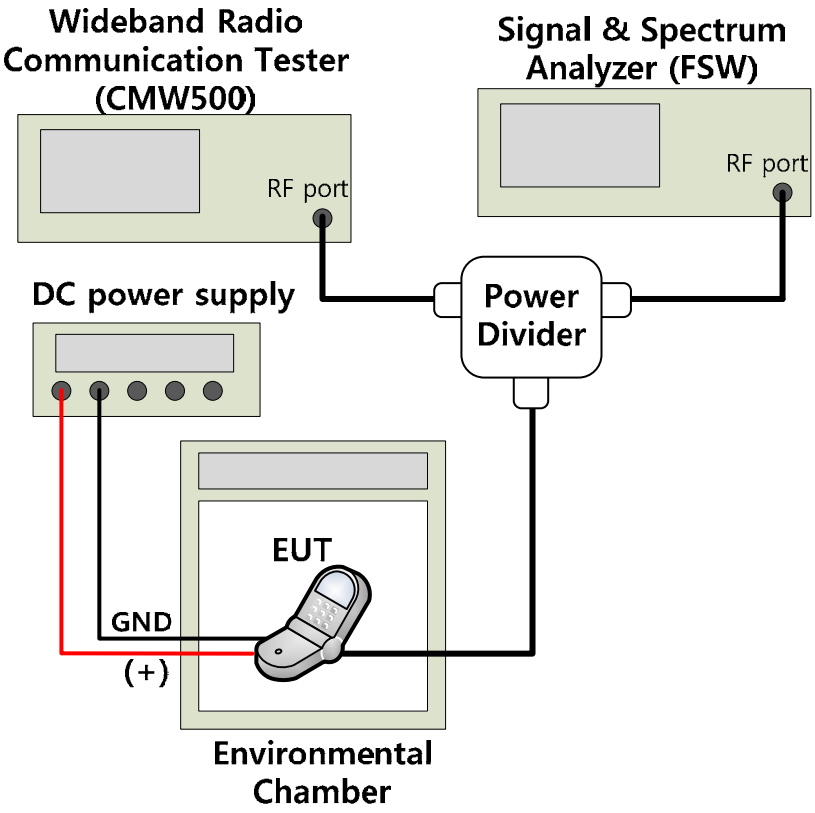

Figure 6-4. Test Instruments & Measurement Setup

Test Notes

1. MCF is the Measured Carrier Frequency
   ACF is the Assigned Carrier Frequency

2. Calculate the ppm frequency error by the following:

$$\text{ppm error} = \left(\frac{\text{MCF}_{[\text{MHz}]}}{\text{ACF}_{[\text{MHz}]}} - 1\right) \times 10^6$$

3. For part 27, the fundamental emission should stay within the authorized frequency block. But, based on the results of the frequency stability test at the center channel, the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Mode : LTE Band 17
Channel : 23790
Operating Frequency : 710.0 MHz
Reference Voltage : 3.85 VDC

Voltage [%]	Power [VDC]	Temp [℃]	ACF [MHz]	MCF [MHz]	Freq. Dev. [Hz]	ppm error
100 %	3.85	-30	710	710.000004	4.03	0.006
		-20	710	710.000004	3.91	0.006
		-10	710	710.000004	3.92	0.006
		0	710	710.000004	4.33	0.006
		+10	710	709.999996	-3.65	-0.005
		+20	710	710.000004	3.50	0.005
		+30	710	710.000004	4.13	0.006
		+40	710	710.000004	4.23	0.006
		+50	710	709.999996	-3.92	-0.006
Batt.End	3.40	+20	710	709.999994	-5.54	-0.008

Table 6-2. Frequency Stability Data (LTE Band 17)

Mode : LTE Band 41
Channel : 39750
Operating Frequency : 2506.0 MHz
Reference Voltage : 3.85 VDC

Voltage [%]	Power [VDC]	Temp [℃]	ACF [MHz]	MCF [MHz]	Freq. Dev. [Hz]	ppm error
100 %	3.85	-30	2506	2,505.999964	-36.02	-0.014
		-20	2506	2,505.999961	-38.95	-0.016
		-10	2506	2,505.999958	-41.70	-0.017
		0	2506	2,505.999954	-46.16	-0.018
		+10	2506	2,505.999953	-47.41	-0.019
		+20	2506	2,505.999953	-47.45	-0.019
		+30	2506	2,505.999955	-45.19	-0.018
		+40	2506	2,505.999948	-51.54	-0.021
		+50	2506	2,505.999948	-51.63	-0.021
Batt.End	3.40	+20	2506	2,505.999954	-46.45	-0.019

Table 6-3. Frequency Stability Data (LTE Band 41)

6.6. Radiated Power (ERP/EIRP)
§27.50(c.10) §27.50(h.2)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using dipole antennas. Measurements on signals operating above 1GHz are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedure Used

KDB 971168 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

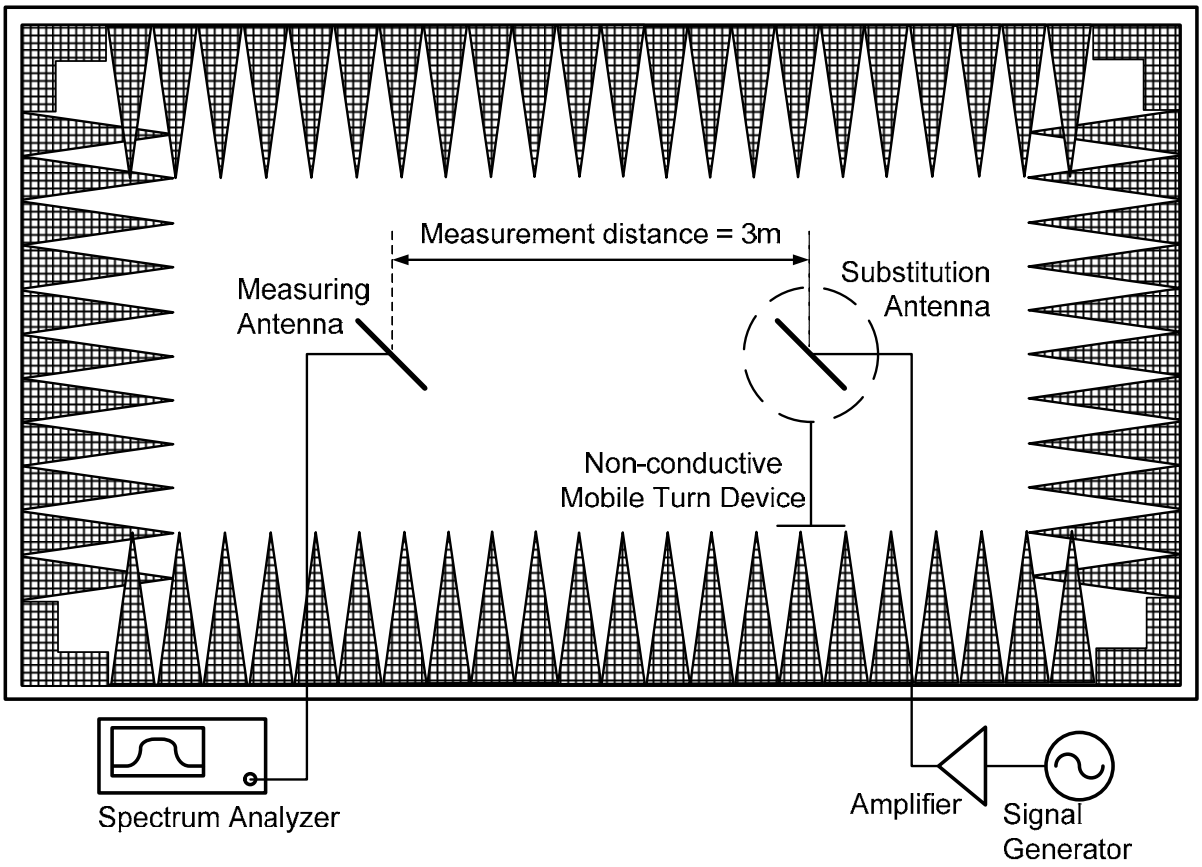

Figure 6-7. Test Instruments & Measurement Setup

Test Notes

1. The EUT was tested with Turn Device and the worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2. This unit was tested with its embedded battery.

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Test Results

Channel	Freq. [MHz]	Channel BW [MHz]	Mod.	RB Size /Offset	Ant Pol (H/V)	EUT POL [degree]		S/A Reading [dBm]	S/G Level [dBm]	Tx C/L [dB]	Ant. Gain [dBd]	ERP [dBm]	Limit [dBm]	Margin [dB]
						Azimuth	Elevation							
23755	706.5	5	QPSK	1/0	H	290	5	-15.54	22.74	2.36	-0.76	19.62	34.77	15.15
23755	706.5	5	16QAM	1/0	H	290	5	-16.87	21.41	2.36	-0.76	18.29	34.77	16.48
23790	710.0	5	QPSK	1/0	H	300	10	-15.62	23.23	2.39	-0.79	20.05	34.77	14.72
23790	710.0	5	16QAM	1/26	H	300	10	-17.25	21.60	2.39	-0.79	18.42	34.77	16.35
23825	713.5	5	QPSK	1/0	H	295	0	-14.96	23.71	2.34	-0.82	20.55	34.77	14.22
23825	713.5	5	16QAM	1/12	H	295	0	-16.27	22.40	2.34	-0.82	19.24	34.77	15.53
23780	709.0	10	QPSK	1/0	H	305	0	-15.65	23.20	2.39	-0.79	20.02	34.77	14.75
23780	709.0	10	16QAM	1/0	H	305	0	-16.57	22.28	2.39	-0.79	19.10	34.77	15.67
23790	710.0	10	QPSK	1/0	H	300	0	-15.47	23.38	2.39	-0.79	20.20	34.77	14.57
23790	710.0	10	16QAM	1/49	H	300	0	-16.75	22.10	2.39	-0.79	18.92	34.77	15.85
23800	711.0	10	QPSK	1/0	H	292	0	-15.36	23.51	2.40	-0.80	20.31	34.77	14.46
23800	711.0	10	16QAM	1/0	H	292	0	-16.72	22.15	2.40	-0.80	18.95	34.77	15.82
23825	713.5	5	QP	1/0	V	30	90	-23.35	13.79	2.34	-0.82	10.63	34.77	24.14

Table 6-4. ERP (LTE Band 17)

Channel	Freq. [MHz]	Channel BW [MHz]	Mod.	RB Size /Offset	Ant Pol (H/V)	EUT POL [degree]		S/A Reading [dBm]	S/G Level [dBm]	Tx C/L [dB]	Ant. Gain [dBi]	EIRP [dBm]	Limit [dBm]	Margin [dB]
						Azimuth	Elevation							
39675	2498.5	5	QPSK	1/0	V	200	270	-22.34	21.12	4.22	9.90	26.80	33.01	6.21
39675	2498.5	5	16QAM	1/0	V	200	270	-22.60	20.86	4.22	9.90	26.54	33.01	6.47
40620	2593.0	5	QPSK	1/24	V	202	267	-23.96	20.65	4.33	9.51	25.83	33.01	7.18
40620	2593.0	5	16QAM	1/12	V	202	267	-24.42	20.19	4.33	9.51	25.37	33.01	7.64
41565	2687.5	5	QPSK	1/12	V	205	260	-22.21	22.30	4.36	8.99	26.93	33.01	6.08
41565	2687.5	5	16QAM	1/0	V	205	260	-22.68	21.83	4.36	8.99	26.46	33.01	6.55
39700	2501.0	10	QPSK	1/49	V	200	260	-22.49	20.98	4.22	9.89	26.65	33.01	6.36
39700	2501.0	10	16QAM	1/0	V	200	260	-22.88	20.59	4.22	9.89	26.26	33.01	6.75
40620	2593.0	10	QPSK	1/0	V	205	265	-23.77	20.84	4.33	9.51	26.02	33.01	6.99
40620	2593.0	10	16QAM	1/0	V	205	265	-24.53	20.08	4.33	9.51	25.26	33.01	7.75
41540	2685.0	10	QPSK	1/0	V	202	264	-22.49	22.62	4.40	9.02	27.24	33.01	5.77
41540	2685.0	10	16QAM	1/0	V	202	264	-23.14	21.97	4.40	9.02	26.59	33.01	6.42
39725	2503.5	15	QPSK	1/0	V	205	262	-22.62	20.90	4.26	9.88	26.52	33.01	6.49
39725	2503.5	15	16QAM	1/0	V	205	262	-22.91	20.61	4.26	9.88	26.23	33.01	6.78
40620	2593.0	15	QPSK	1/0	V	200	265	-23.96	20.65	4.33	9.51	25.83	33.01	7.18
40620	2593.0	15	16QAM	1/0	V	200	265	-24.85	19.76	4.33	9.51	24.94	33.01	8.07
41515	2682.5	15	QPSK	1/0	V	203	260	-22.52	22.67	4.47	9.01	27.21	33.01	5.80
41515	2682.5	15	16QAM	1/0	V	203	260	-22.66	22.53	4.47	9.01	27.07	33.01	5.94
39750	2506.0	20	QPSK	1/0	V	205	260	-22.61	21.15	4.19	9.84	26.80	33.01	6.21
39750	2506.0	20	16QAM	1/0	V	205	260	-22.87	20.89	4.19	9.84	26.54	33.01	6.47
40620	2593.0	20	QPSK	1/0	V	200	263	-23.96	20.65	4.33	9.51	25.83	33.01	7.18
40620	2593.0	20	16QAM	1/0	V	200	263	-24.81	19.80	4.33	9.51	24.98	33.01	8.03
41490	2680.0	20	QPSK	1/0	V	200	260	-22.88	22.31	4.50	9.04	26.85	33.01	6.16
41490	2680.0	20	16QAM	1/0	V	200	260	-23.57	21.62	4.50	9.04	26.16	33.01	6.85
41540	2685.0	10	QPSK	1/0	H	208	5	-22.76	21.91	4.40	9.02	26.53	33.01	6.48

Table 6-5. EIRP (LTE Band 41)

6.7. Radiated Spurious Emissions Measurements
§2.1053 §27.53(g) §27.53(m)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using dipole antennas. Measurements on signals operating above 1GHz are performed using broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedure Used

KDB 971168 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. No. of sweep points ≥ Span / RBW
4. Detector = RMS
5. Trace mode = Average (Max hold for pulsed emissions)
6. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

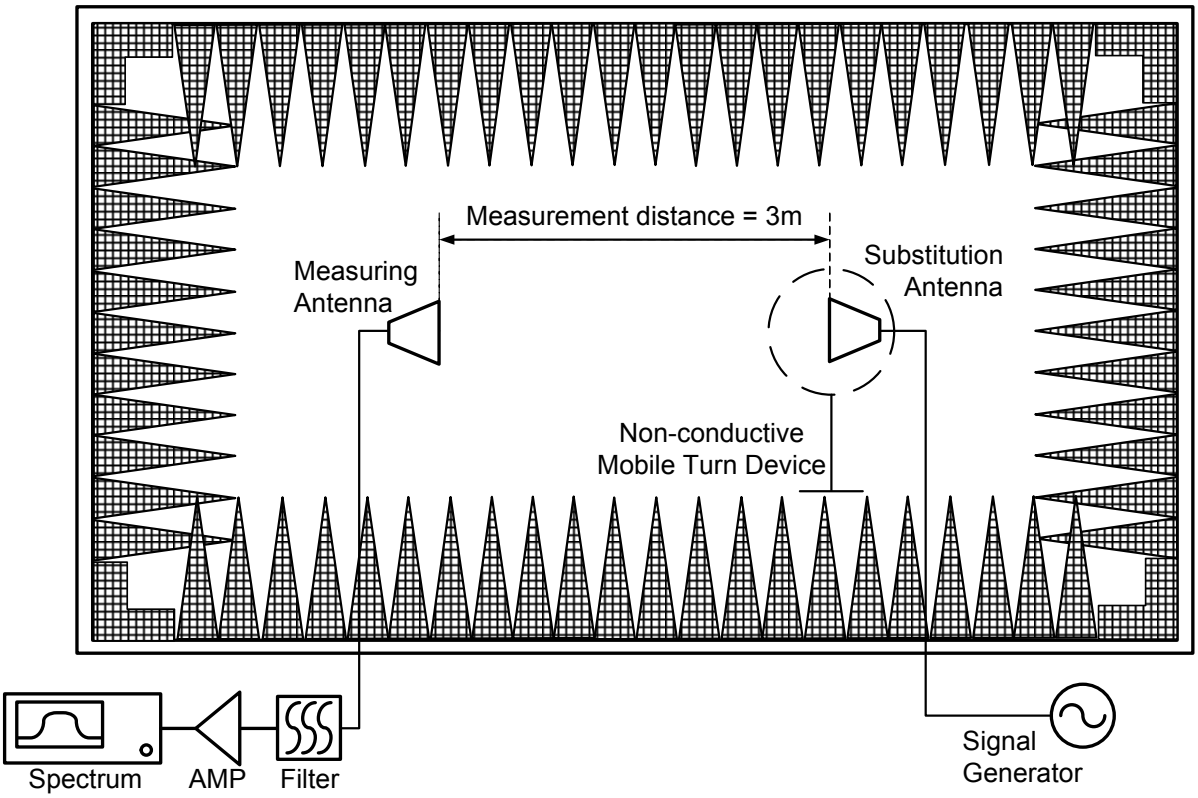

Figure 6-8. Test Instruments & Measurement Setup

Test Notes

1. The EUT was tested with Turn Device and the worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
2. This unit was tested with its embedded battery.
3. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

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Test Results

Operating Frequency	:	709	MHz			
Channel	:	23780				
Measured Output Power	:	20.02	dBm	=	0.100	Watt
Modulation Signal	:	QPSK				
Band Width	:	10	MHz			
RB Size / Offset	:	1 / 0				
Distance	:	3 meters				
Limit	:	$43 + 10\log_{10}(W)$		=	33.02	dBc
RSE Limit	:	-13 dBm				

Freq. [MHz]	Ant Pol (H/V)	EUT Pol [degree]		S/A reading [dBm]	S/G Lev. [dBm]	Tx C/L [dB]	Ant. Gain [dBd]	RSE Level [dBm]
		Azimuth	Elevation					
1418.0	H	195	15	-45.00	-45.79	3.36	7.52	-41.63
2127.0	H	135	90	-50.54	-46.01	4.49	6.98	-43.51
2836.0	H	195	15	-66.05	-63.61	5.43	9.66	-59.38
3545.0	V	225	30	-69.37	-63.10	6.68	9.89	-59.87
4254.0	V	Noise floor		-74.22	-65.80	6.68	10.89	-61.59

Table 6-6. Radiated Spurious Data (LTE Band 17 – Low Channel)

Operating Frequency	:	710	MHz			
Channel	:	23790				
Measured Output Power	:	20.20	dBm	=	0.105	Watt
Modulation Signal	:	QPSK				
Band Width	:	10	MHz			
RB Size / Offset	:	1 / 0				
Distance	:	3 meters				
Limit	:	$43 + 10\log_{10}(W)$		=	33.20	dBc
RSE Limit	:	-13 dBm				

Freq. [MHz]	Ant Pol (H/V)	EUT Pol [degree]		S/A reading [dBm]	S/G Lev. [dBm]	Tx C/L [dB]	Ant. Gain [dBd]	RSE Level [dBm]
		Azimuth	Elevation					
1420.0	H	180	0	-56.89	-57.71	3.36	7.51	-53.55
2130.0	H	300	0	-65.71	-61.26	4.49	6.98	-58.77
2840.0	H	150	15	-70.95	-69.06	5.43	9.66	-64.82
3550.0	V	Noise floor		-72.31	-65.97	6.68	9.89	-62.74

Table 6-7. Radiated Spurious Data (LTE Band 17 – Mid Channel)

Operating Frequency	:	713.5	MHz			
Channel	:	23825				
Measured Output Power	:	20.55	dBm	=	0.114	Watt
Modulation Signal	:	QPSK				
Band Width	:	5	MHz			
RB Size / Offset	:	1 / 0				
Distance	:	3 meters				
Limit	:	$43 + 10\log_{10}(W)$		=	33.55	dBc
RSE Limit	:	-13 dBm				

Freq. [MHz]	Ant Pol (H/V)	EUT Pol [degree]		S/A reading [dBm]	S/G Lev. [dBm]	Tx C/L [dB]	Ant. Gain [dBd]	RSE Level [dBm]
		Azimuth	Elevation					
1427.0	H	180	0	-52.16	-53.02	3.38	7.52	-48.87
2140.5	H	180	0	-63.74	-59.38	4.47	7.01	-56.84
2854.0	H	150	0	-70.35	-68.63	5.45	9.79	-64.29
3567.5	H	Noise floor		-72.16	-66.56	6.09	9.94	-62.71

Table 6-8. Radiated Spurious Data (LTE Band 17 – High Channel)

Operating Frequency	:	2506.0	MHz			
Channel	:	39750				
Measured Output Power	:	26.80	dBm	=	0.479	Watt
Modulation Signal	:	QPSK				
Band Width	:	20	MHz			
RB Size / Offset	:	1 / 0				
Distance	:	3 Meters				
Limit	:	$55 + 10\log_{10}(W)$		=	51.80	dBc
RSE Limit	:	-25 dBm				

Freq. [MHz]	Ant Pol (H/V)	EUT Pol [degree]		S/A reading [dBm]	S/G Lev. [dBm]	Tx C/L [dB]	Ant. Gain [dBi]	RSE Level [dBm]
		Azimuth	Elevation					
5012.0	H	180	240	-59.71	-45.60	7.07	11.24	-41.42
7518.0	H	150	90	-70.18	-45.76	8.75	9.73	-44.78
10024.0	V	150	180	-74.22	-46.44	9.67	11.89	-44.21
12530.0	V	60	30	-71.15	-37.61	10.98	13.08	-35.50

Table 6-9. Radiated Spurious Data (LTE Band 41 – Low Channel)

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Operating Frequency	:	2593.0	MHz			
Channel	:	40620				
Measured Output Power	:	26.02	dBm	=	0.400	Watt
Modulation Signal	:	QPSK				
Band Width	:	10	MHz			
RB Size / Offset	:	1 / 0				
Distance	:	3 meters				
Limit	:	$55 + 10\log_{10}(W)$		=	51.02	dBc
RSE Limit	:	-25 dBm				

Freq. [MHz]	Ant Pol (H/V)	EUT Pol [degree]		S/A reading [dBm]	S/G Lev. [dBm]	Tx C/L [dB]	Ant. Gain [dBi]	RSE Level [dBm]
		Azimuth	Elevation					
5186.0	H	60	60	-61.38	-46.68	7.43	11.57	-42.53
7779.0	H	150	90	-72.46	-48.30	8.98	10.21	-47.06
10372.0	H	180	60	-75.90	-46.81	10.03	11.92	-44.92
12965.0	H	Noise floor		-76.41	-40.44	10.75	12.68	-38.51

Table 6-10. Radiated Spurious Data (LTE Band 41 – Mid Channel)

Operating Frequency	:	2685.0	MHz			
Channel	:	41540				
Measured Output Power	:	27.24	dBm	=	0.530	Watt
Modulation Signal	:	QPSK				
Band Width	:	10	MHz			
RB Size / Offset	:	1 / 0				
Distance	:	3 meters				
Limit	:	$55 + 10\log_{10}(W)$		=	52.24	dBc
RSE Limit	:	-25 dBm				

Freq. [MHz]	Ant Pol (H/V)	EUT Pol [degree]		S/A reading [dBm]	S/G Lev. [dBm]	Tx C/L [dB]	Ant. Gain [dBi]	RSE Level [dBm]
		Azimuth	Elevation					
5365.0	H	225	225	-62.61	-47.73	7.3	11.515	-43.51
8047.5	H	225	90	-74.68	-49.75	9.27	10.79	-48.23
10730.0	H	Noise floor		-75.95	-45.39	9.99	12.255	-43.11
13412.5	H			-76.77	-38.57	11.07	12.64	-36.99

Table 6-11. Radiated Spurious Data (LTE Band 41 – High Channel)

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7. CONCLUSION

The data collected relate only the item(s) tested and show that the Samsung Portable Handset FCC ID: A3LSMJ530 compliance with all the requirements of Parts 2, 27 of the FCC rules.

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