

TEST REPORT

of

FCC Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart C/ L / H
RSS-130 Issue 1, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 3
and RSS-Gen Issue 4

FCC ID: BEJGEN11NAN
IC Certification: 2703H-GEN11NAN

Equipment Under Test : Telematics
Model Name : GEN11NAN
Applicant : LG Electronics Inc.
Manufacturer : LG Electronics Inc.
Date of Receipt : 2017.02.15
Date of Test(s) : 2017.02.24 ~ 2017.06.26
Date of Issue : 2017.07.26

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Brant Jang

Date:

2017.07.26

Technical
Manager:



Harim Lee

Date:

2017.07.26

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1. General information

1.1. Testing laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : +82 31 688 0901

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1.2. Details of applicant

Applicant : LG Electronics Inc.

Address : 222 LG-ro Jinwi-Myeon, Pyeongtaek-si, Gyeonggi-do, 17709, Korea

Contact Person : Park, Eui-Soon

Phone No. : +82 2 2033 1110

1.3. Description of EUT

Kind of Product	Telematics
Model Name	GEN11NAN
Power Supply	DC 12 V
Rated Power	GSM 850: 33 dB m GSM 1 900: 30 dB m WCDMA 2, 4, 5: 23 dB m LTE Band 2, 4, 5, 12,13 17: 23 dB m
Frequency Range	GSM 850: 824 MHz ~ 849 MHz GSM 1 900: 1 850 MHz ~ 1 910 MHz WCDMA 2: 1 850 MHz ~ 1 910 MHz WCDMA 4: 1 710 MHz ~ 1 755 MHz WCDMA 5: 824 MHz ~ 849 MHz LTE Band 2: 1 850 MHz ~ 1 910 MHz LTE Band 4: 1 710 MHz ~ 1 755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz
Emission Designator	GSM 850: 244KGXW (Voice) / 243KG7W (EDGE) GSM 1900: 243KGXW (Voice) / 243KG7W (EDGE) WCDMA 2: 4M15F9W WCDMA 4: 4M14F9W WCDMA 5: 4M13F9W LTE Band 2 (1.4 MHz): 1M10G7D (QPSK) / 1M10W7D (16QAM) LTE Band 2 (3 MHz): 2M76G7D (QPSK) / 2M75W7D (16QAM) LTE Band 2 (5 MHz): 4M51G7D (QPSK) / 4M51W7D (16QAM) LTE Band 2 (10 MHz): 9M01G7D (QPSK) / 8M99W7D (16QAM) LTE Band 2 (15 MHz): 13M5G7D (QPSK) / 13M5W7D (16QAM) LTE Band 2 (20 MHz): 18M1G7D (QPSK) / 18M1W7D (16QAM)

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Emission Designator	LTE Band 4 (1.4 MHz): 1M10G7D (QPSK) / 1M10W7D (16QAM) LTE Band 4 (3 MHz): 2M75G7D (QPSK) / 2M75W7D (16QAM) LTE Band 4 (5 MHz): 4M51G7D (QPSK) / 4M51W7D (16QAM) LTE Band 4 (10 MHz): 9M01G7D (QPSK) / 9M00W7D (16QAM) LTE Band 4 (15 MHz): 13M5G7D (QPSK) / 13M5W7D (16QAM) LTE Band 4 (20 MHz): 18M1G7D (QPSK) / 18M1W7D (16QAM) LTE Band 5 (1.4 MHz): 1M10G7D (QPSK) / 1M10W7D (16QAM) LTE Band 5 (3 MHz): 2M75G7D (QPSK) / 2M75W7D (16QAM) LTE Band 5 (5 MHz): 4M51G7D (QPSK) / 4M51W7D (16QAM) LTE Band 5 (10 MHz): 9M02G7D (QPSK) / 9M01W7D (16QAM) LTE Band 12 (1.4 MHz): 1M10G7D (QPSK) / 1M09W7D (16QAM) LTE Band 12 (3 MHz): 2M75G7D (QPSK) / 2M75W7D (16QAM) LTE Band 12 (5 MHz): 4M52G7D (QPSK) / 4M51W7D (16QAM) LTE Band 12 (10 MHz): 9M00G7D (QPSK) / 9M00W7D (16QAM) LTE Band 13 (5 MHz): 4M54G7D (QPSK) / 4M54W7D (16QAM) LTE Band 13 (10 MHz): 9M00G7D (QPSK) / 9M01W7D (16QAM) LTE Band 17 (5 MHz): 4M52G7D (QPSK) / 4M51W7D (16QAM) LTE Band 17 (10 MHz): 9M01G7D (QPSK) / 9M02W7D (16QAM)
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1.4. Test equipment list

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due.
Signal Generator	Agilent	E8257D	MY51501169	Jul. 07, 2016	Annual	Jul. 07, 2017
Spectrum Analyzer	R&S	FSV30	100955	Mar. 20, 2017	Annual	Mar. 20, 2018
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 23, 2016	Annual	Sep. 23, 2017
Mobile Test Unit	R&S	CMW500	144035	Feb. 22, 2017	Annual	Feb. 22, 2018
Power Meter	Anritsu	ML2495A	1223004	Jun. 09, 2017	Annual	Jun. 09, 2018
Power Sensor	Anritsu	MA2411B	1207272	Jun. 09, 2017	Annual	Jun. 09, 2018
Directional Coupler	KRYTAR	152613	140972	Jun. 12, 2017	Annual	Jun. 12, 2018
Temperature Chamber	ESPEC CORP.	PL-1J	15000793	Jun. 14, 2017	Annual	Jun. 14, 2018
High Pass Filter	Wainwright Instrument GmbH	WHKX10-900-1000-18000-40SS	7	Mar. 30, 2017	Annual	Mar. 30, 2018
High Pass Filter	Wainwright Instrument GmbH	WHK3.0/18G-10SS	344	May 28, 2017	Annual	May 28, 2018
High Pass Filter	Wainwright Instrument GmbH	WHKX2.2/12.75G-10SS	8	Mar. 30, 2017	Annual	Mar. 30, 2018
High Pass Filter	Wainwright Instrument GmbH	WHKX1.5/15G-6SS	4	Jun. 14, 2017	Annual	Jun. 14, 2018
DC Power Supply	Agilent	U8002A	MY50060028	Mar. 16, 2017	Annual	Mar. 16, 2018
Preamplifier	H.P.	8447F	2944A03909	Aug. 11, 2016	Annual	Aug. 11, 2017
Preamplifier	R&S	SCU 18	10117	Apr. 08, 2017	Annual	Apr. 08, 2018
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	May 15, 2017	Annual	May 15, 2018
Test Receiver	R&S	ESU26	100109	Feb. 17, 2017	Annual	Feb. 17, 2018
Bilog Antenna	SCHWARZBECK MESSELEKTRONIK	VULB9163	437	Oct. 21, 2016	Biennial	Oct. 21, 2018
Horn Antenna	R&S	HF906	100326	Feb. 01, 2016	Biennial	Feb. 01, 2018
Horn Antenna	SCHWARZBECK MESSELEKTRONIK	BBHA9170	BBHA9170223	Aug. 25, 2016	Biennial	Aug. 25, 2018
Antenna Master	Innco systems GmbH	MM4000	N/A	N.C.R.	N/A	N.C.R.
Turn Table	Innco systems GmbH	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/38330516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.4 m)	N/A	N.C.R.	N/A	N.C.R.

► Support equipment

Description	Manufacturer	Model	Serial Number
N/A	-	-	-

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1.5. Summary of test results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 2, 22, 24 and 27 / IC part RSS-130 Issue 1, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 3 and RSS-Gen Issue 4			
Section in FCC part	Section in IC part	Test Item	Result
§2.1046 §22.913(a)(5) §24.232(c) §27.50(b)(10) §27.50(c)(10) §27.50(d)(4)	RSS-130 Issue 1 4.4 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 3 6.5	RF Radiated Output Power	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)(1)	RSS-130 Issue 1 4.6 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Spurious Radiated Emission	Complied
§2.1046	RSS-Gen Issue 4 6.12	Conducted Output Power	Complied
§2.1049	RSS-Gen Issue 4 6.6	Occupied Bandwidth	Complied
§22.913(d) §24.232(d) §27.50(d)(5)	RSS-130 Issue 1 4.4 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 3 6.5	Peak-Average Ratio	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)(1)	RSS-130 Issue 1 4.6 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Spurious Emission at Antenna Terminal	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)(1)	RSS-130 Issue 1 4.6 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 3 6.6	Band Edge	Complied
§2.1055 §22.355 §24.235 §27.54	RSS-Gen Issue 4 6.11 RSS-130 Issue 1 4.3 RSS-132 Issue 3 5.3 RSS-133 Issue 6 6.3 RSS-139 Issue 3 6.4	Frequency Stability	Complied

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1.6. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL011621	2017.07.17	Initial
1	F690501/RF-RTL011621-1	2017.07.26	Modified spurious limit, KDB 971168 v02r02 and spurious margin as negative value.

1.7. Sample calculation for offset

Where relevant, the following sample calculation is provided:

1.7.1. Conducted test

Offset value (dB) = Directional Coupler (dB) + Cable loss (dB)

1.7.2. Radiation test

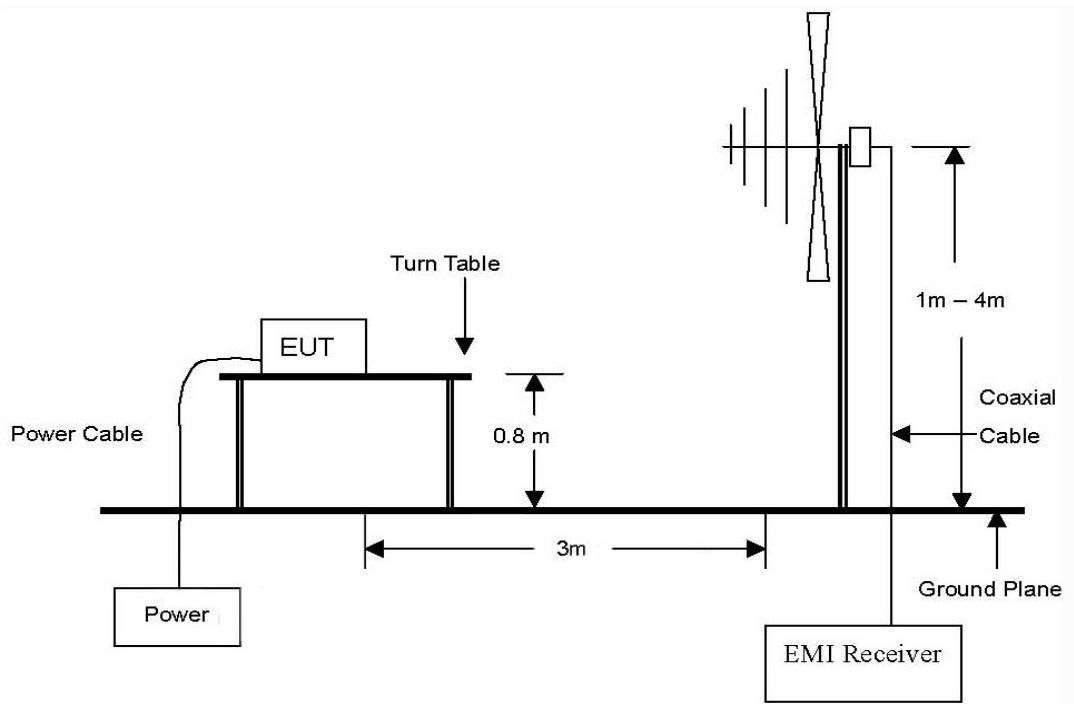
E.R.P. & E.I.R.P. = [S.G level + Amp.] (dB m) - Cable loss (dB) + Ant. gain (dB d/dB i)

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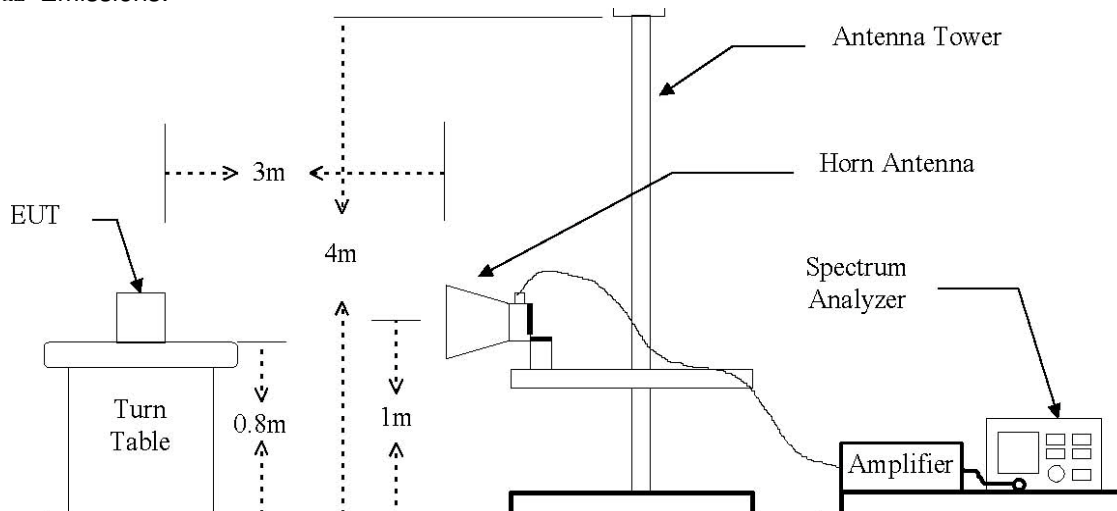
2. RF radiated output power & spurious radiated emission

2.1. Test setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.

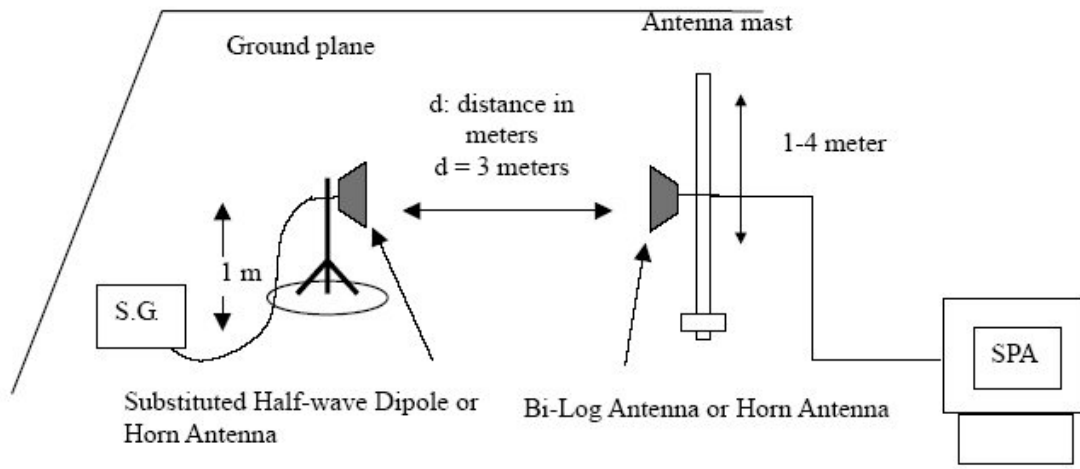


The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 20 GHz Emissions.



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The diagram below shows the test setup for substituted method.



2.2. Limit

2.2.1. Limit of radiated output power

FCC

- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

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

- §27.50(b)(10), portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

- §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.

- §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1 710-1 755 MHz band and mobile and portable stations operating in the 1 695-1 710 MHz and 1 755-1 780 MHz bands are limited to 1 watt EIRP.

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IC

- RSS-130 Issue 1

4.4, the transmitter output power shall be measured in terms of average power.

For base and fixed equipment, refer to SRSP-518 for power limits.

The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

- RSS-132 Issue 3

5.4, the transmitter output power shall be measured in terms of average power.

The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

Refer to SRSP-503 for base station e.i.r.p. limits.

- RSS-133 Issue 6

6.4, the equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1 930-1 995 MHz shall not have output power exceeding 100 watts.

- RSS-139 Issue 3

6.5, the equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1 710-1 780 MHz shall not exceed one watt.

2.2.2. Limit of spurious radiated emission

FCC

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

- §27.53(c)(2), on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB.

- §27.53(g), the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB.

- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

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IC

- RSS-130 Issue 1

4.6.1, the power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dB W), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

4.6.2, In addition to the limit outlined in Section 4.6.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dB W), by at least:

- (i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and
- (ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

(b) The e.i.r.p. in the band 1 559-1 610 MHz shall not exceed -70 dB W/MHz for wideband signal and -80 dB W for discrete emission with bandwidth less than 700 Hz.

- RSS-132 Issue 3

5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 kHz is required.

- RSS-133 Issue 6

6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 MHz is required.

- RSS-139 Issue 3

6.6, (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1 % of the emission bandwidth shall be attenuated below the transmitter output power P (in dB W) by at least $43 + 10 \log_{10} p$ (watts) dB.

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dB W) by at least $43 + 10 \log_{10} p$ (watts) dB.

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2.3. Test procedure: Based on ANSI/TIA 603C: 2004

1. On a test site, the EUT shall be placed at 80 cm height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions occupied bandwidth, $RBW = 1-5\%$ of the OBW (not to exceed 1 MHz), $VBW \geq 3 \times RBW$, Detector = power averaging (rms), sweep time = auto, trace average at least 100 traces in power averaging (rms) mode, per the guidelines of KDB 971168 D01 v02r02.
5. Radiated spurious emissions measurement method was set as follows:
 $RBW = 100\text{ kHz}$ for emissions below 1 GHz and 1 MHz for emissions above 1 GHz, $VBW \geq 3 \times RBW$, Detector = Peak, trace mode = max hold, per the guidelines of KDB 971168 D01 v02r02.
6. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
7. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
8. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
9. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
10. The maximum signal level detected by the measuring receiver shall be noted.
11. The EUT was replaced by half-wave dipole (1 GHz below) or horn antenna (1 GHz above) connected to a signal generator.
12. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The input level to the substitution antenna shall be recorded as power level in

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2.4. Test result for RF radiated output power

Ambient temperature : (23 ± 1) °C
Relative humidity : 47 % R.H.

LTE band 2 (1.4

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LTE band 2 (3)

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

LTE band 2 (10

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A4(210 mm x 297 mm)

LTE band 2 (15

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A4(210 mm x 297 mm)

LTE band 4 (1.4

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Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

LTE band 4 (3)

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A4(210 mm x 297 mm)

LTE band 4 (10

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A4(210 mm x 297 mm)

LTE band 4 (15

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A4(210 mm x 297 mm)

LTE band 5 (1.4

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

LTE band 5 (3)

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RTT5041-19(2017.07.10)(0)

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A4(210 mm x 297 mm)

LTE band 5 (10

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RTT5041-19(2017.07.10)(0)

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A4(210 mm x 297 mm)

LTE band 12 (1.4

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A4(210 mm x 297 mm)

LTE band 12 (3

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A4(210 mm x 297 mm)

LTE band 12 (10

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A4(210 mm x 297 mm)

LTE band 13 (5

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

LTE band 17 (5)

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

LTE band 17 (10

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

2.5. Spurious radiated emission

- Measured output Power: 18.19 dB m = 0.065 9 W
- Modulation Signal: LTE band 2 (1.4 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 31.19$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 850.7 MHz)							
3 700.54	V	-31.11	5.96	9.06	-28.01	-13	-15.01
3 700.51	H	-29.95	5.96	9.06	-26.85	-13	-13.85
5 550.74	V	-41.52	7.53	10.63	-38.42	-13	-25.42
5 550.60	H	-42.25	7.53	10.63	-39.15	-13	-26.15
7 400.78	V	-47.64	9.29	12.03	-44.90	-13	-31.90
7 400.80	V	-51.45	9.29	12.03	-48.71	-13	-35.71
9 251.24	H	-39.46	10.15	12.63	-36.98	-13	-23.98
Middle Channel (1 880.0 MHz)							
3 759.12	V	-34.09	6.26	9.12	-31.23	-13	-18.23
3 759.00	H	-35.61	6.26	9.12	-32.75	-13	-19.75
5 638.70	V	-46.77	7.64	10.90	-43.51	-13	-30.51
5 638.64	H	-42.73	7.64	10.90	-39.47	-13	-26.47
7 518.12	V	-49.45	9.05	11.83	-46.67	-13	-33.67
7 518.17	V	-52.00	9.05	11.83	-49.22	-13	-36.22
9 397.57	H	-39.83	10.28	12.47	-37.64	-13	-24.64
High Channel (1 909.3 MHz)							
3 817.74	V	-29.45	6.51	9.15	-26.81	-13	-13.81
3 817.65	H	-34.09	6.51	9.15	-31.45	-13	-18.45
5 726.67	V	-44.68	7.86	11.27	-41.27	-13	-28.27
5 726.49	H	-42.27	7.86	11.27	-38.86	-13	-25.86
7 635.61	V	-48.03	9.02	11.74	-45.31	-13	-32.31
7 635.58	H	-49.62	9.02	11.74	-46.90	-13	-33.90
9 544.45	V	-40.82	10.25	12.62	-38.45	-13	-25.45
9 544.22	H	-40.23	10.25	12.62	-37.86	-13	-24.86

* 1.4 BW 1RB size / 0 Offset for B2

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- Measured output Power: 18.41 dB m = 0.069 3 W
- Modulation Signal: LTE band 2 (3 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 31.41$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 851.5 MHz)							
3 700.35	V	-32.32	5.96	9.06	-29.22	-13	-16.22
3 700.51	H	-31.36	5.96	9.06	-28.26	-13	-15.26
5 550.52	V	-41.27	7.53	10.63	-38.17	-13	-25.17
5 550.48	H	-41.91	7.53	10.63	-38.81	-13	-25.81
7 400.84	V	-48.05	9.29	12.03	-45.31	-13	-32.31
7 401.00	H	-51.92	9.29	12.03	-49.18	-13	-36.18
9 251.12	V	-39.73	10.15	12.62	-37.26	-13	-24.26
9 251.22	H	-38.14	10.15	12.63	-35.66	-13	-22.66
Middle Channel (1 880.0 MHz)							
3 757.42	V	-41.33	6.25	9.12	-38.46	-13	-18.55
3 757.52	H	-41.03	6.25	9.12	-38.16	-13	-21.21
5 636.35	V	-46.36	7.63	10.88	-43.11	-13	-30.04
5 635.99	H	-46.88	7.63	10.88	-43.63	-13	-28.80
7 514.88	V	-44.64	9.05	11.83	-41.86	-13	-33.65
7 514.99	H	-48.43	9.05	11.83	-45.65	-13	-36.34
9 393.65	V	-39.99	10.28	12.48	-37.79	-13	-24.78
9 393.54	H	-46.67	10.28	12.48	-44.47	-13	-27.17
High Channel (1 908.5 MHz)							
3 814.49	V	-30.26	6.50	9.15	-27.61	-13	-14.61
3 814.55	H	-36.42	6.50	9.15	-33.77	-13	-20.77
5 721.51	V	-42.87	7.85	11.27	-39.45	-13	-26.45
5 721.88	H	-41.99	7.85	11.27	-38.57	-13	-25.57
7 629.23	V	-49.06	9.04	11.75	-46.35	-13	-33.35
7 629.01	H	-49.39	9.04	11.75	-46.68	-13	-33.68
9 535.91	V	-40.32	10.28	12.62	-37.98	-13	-24.98
9 536.29	H	-39.36	10.28	12.62	-37.02	-13	-24.02

* 3 BW 1RB size / 0 Offset for B2

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

- Measured output Power : 17.58 dB m = 0.057 3 W
- Modulation Signal : LTE band 2 (5 MHz - QPSK)
- Distance : 3 meters
- Limit : $43 + 10\log_{10}(W) = 30.58$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 852.5 MHz)							
3 700.70	V	-34.34	5.96	9.06	-31.24	-13	-18.24
3 700.65	H	-33.51	5.96	9.06	-30.41	-13	-17.41
5 551.01	V	-40.42	7.53	10.63	-37.32	-13	-24.32
5 551.01	V	-41.26	7.53	10.63	-38.16	-13	-25.16
7 401.35	H	-46.97	9.29	12.03	-44.23	-13	-31.23
7 401.42	V	-52.29	9.29	12.03	-49.55	-13	-36.55
9 251.59	H	-38.45	10.15	12.63	-35.97	-13	-22.97
Middle Channel (1 880.0 MHz)							
3 755.65	V	-34.64	6.24	9.12	-31.76	-13	-18.76
3 755.78	H	-36.35	6.24	9.12	-33.47	-13	-20.47
5 633.45	V	-46.50	7.62	10.87	-43.25	-13	-30.25
5 633.41	H	-44.94	7.62	10.87	-41.69	-13	-28.69
7 511.67	V	-49.16	9.05	11.84	-46.37	-13	-33.37
7 511.55	H	-51.94	9.05	11.84	-49.15	-13	-36.15
9 389.12	V	-37.00	10.28	12.49	-34.79	-13	-21.79
9 389.28	H	-42.57	10.28	12.49	-40.36	-13	-27.36
High Channel (1 907.5 MHz)							
3 810.62	V	-30.46	6.49	9.16	-27.79	-13	-14.79
3 810.70	H	-37.17	6.49	9.16	-34.50	-13	-21.50
5 716.10	V	-43.14	7.85	11.27	-39.72	-13	-26.72
5 716.01	H	-40.58	7.85	11.27	-37.16	-13	-24.16
7 621.30	V	-48.51	9.06	11.76	-45.81	-13	-32.81
7 621.62	H	-49.44	9.06	11.76	-46.74	-13	-33.74
9 526.80	V	-40.04	10.31	12.61	-37.74	-13	-24.74
9 526.71	H	-41.68	10.31	12.61	-39.38	-13	-26.38

* 5 BW 1RB size / 0 Offset for B2

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- Measured output Power: 18.23 dB m = 0.066 5 W
- Modulation Signal: LTE band 2 (10 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 31.23$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 855.0 MHz)							
3 701.09	V	-36.94	5.97	9.07	-33.84	-13	-20.84
3 701.09	H	-36.31	5.97	9.07	-33.21	-13	-20.21
5 551.68	V	-41.77	7.53	10.63	-38.67	-13	-25.67
5 551.61	H	-40.70	7.53	10.63	-37.60	-13	-24.60
7 402.19	V	-46.76	9.28	12.03	-44.01	-13	-31.01
7 402.29	H	-52.08	9.28	12.03	-49.33	-13	-36.33
9 253.10	V	-38.90	10.16	12.63	-36.43	-13	-23.43
9 252.91	H	-38.65	10.16	12.63	-36.18	-13	-23.18
Middle Channel (1 880.0 MHz)							
3 751.00	V	-34.22	6.22	9.12	-31.32	-13	-18.32
3 751.15	H	-36.11	6.22	9.12	-33.21	-13	-20.21
5 626.71	V	-46.61	7.60	10.83	-43.38	-13	-30.38
5 626.83	H	-43.56	7.60	10.83	-40.33	-13	-27.33
7 502.41	V	-49.17	9.04	11.84	-46.37	-13	-33.37
7 502.51	H	-51.64	9.04	11.84	-48.84	-13	-35.84
9 378.04	V	-40.15	10.27	12.52	-37.90	-13	-24.90
9 378.16	H	-41.12	10.27	12.52	-38.87	-13	-25.87
High Channel (1 905.5 MHz)							
3 801.13	V	-28.64	6.46	9.16	-25.94	-13	-12.94
3 801.13	H	-28.52	6.46	9.16	-25.82	-13	-12.82
5 701.64	V	-47.17	7.83	11.27	-43.73	-13	-30.73
5 701.71	H	-45.29	7.83	11.27	-41.85	-13	-28.85
7 602.33	V	-48.41	9.11	11.79	-45.73	-13	-32.73
7 602.43	H	-49.98	9.11	11.79	-47.30	-13	-34.30
9 502.74	V	-40.94	10.39	12.61	-38.72	-13	-25.72
9 502.42	H	-42.77	10.39	12.61	-40.55	-13	-27.55

* 10 BW 1RB size / 0 Offset for B2

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- Measured output Power : 17.75 dB m = 0.059 6 W
- Modulation Signal : LTE band 2 (15 MHz - QPSK)
- Distance : 3 meters
- Limit : $43 + 10\log_{10}(W) = 30.75$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 857.5 MHz)							
3 701.80	V	-33.52	5.97	9.07	-30.42	-13	17.42
3 701.74	H	-32.87	5.97	9.07	-29.77	-13	16.77
5 552.45	V	-41.78	7.53	10.63	-38.68	-13	25.68
5 552.52	H	-40.42	7.53	10.63	-37.32	-13	24.32
7 402.97	V	-47.02	9.28	12.03	-44.27	-13	31.27
7 403.04	H	-52.62	9.28	12.03	-49.87	-13	36.87
9 254.23	V	-38.87	10.16	12.63	-36.40	-13	23.40
9 254.10	H	-38.64	10.16	12.63	-36.17	-13	23.17
Middle Channel (1 880.0 MHz)							
3 746.58	V	-29.16	6.19	9.11	-26.24	-13	13.24
3 746.64	H	-31.00	6.19	9.11	-28.08	-13	15.08
5 619.78	V	-46.24	7.58	10.78	-43.04	-13	30.04
5 619.97	H	-44.44	7.58	10.78	-41.24	-13	28.24
7 493.64	V	-48.68	9.06	11.85	-45.89	-13	32.89
7 493.54	H	-52.30	9.06	11.85	-49.51	-13	36.51
9 366.35	V	-39.91	10.27	12.55	-37.63	-13	24.63
9 366.61	H	-41.11	10.27	12.55	-38.83	-13	25.83
High Channel (1 902.5 MHz)							
3 791.52	V	-21.89	6.42	9.16	-19.15	-13	6.15
3 791.77	H	-40.26	6.42	9.16	-37.52	-13	19.52
5 687.65	V	-49.28	7.79	11.19	-45.88	-13	32.88
5 687.33	H	-47.82	7.79	11.19	-44.42	-13	31.42
7 583.43	V	-48.26	9.11	11.80	-45.57	-13	32.57
7 583.56	H	-50.25	9.11	11.80	-47.56	-13	34.56
9 479.36	V	-41.65	10.38	12.58	-39.45	-13	26.45
9 479.04	H	-42.56	10.37	12.57	-40.36	-13	27.36

* 15 BW 1RB size / 0 Offset for B2

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- Measured output Power: 18.04 dB m = 0.063 7 W
- Modulation Signal: LTE band 2 (20 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 31.04$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 860.0 MHz)							
3 702.17	V	-35.18	5.97	9.07	-32.08	-13	-19.08
3 702.26	H	-33.19	5.97	9.07	-30.09	-13	-17.09
5 553.26	V	-42.10	7.53	10.63	-39.00	-13	-26.00
5 553.39	H	-42.15	7.53	10.63	-39.05	-13	-26.05
7 404.49	V	-47.72	9.28	12.03	-44.97	-13	-31.97
7 404.41	H	-52.13	9.28	12.03	-49.38	-13	-36.38
9 255.55	V	-39.53	10.16	12.63	-37.06	-13	-24.06
9 255.52	H	-38.38	10.16	12.63	-35.91	-13	-22.91
Middle Channel (1 880.0 MHz)							
3 742.29	V	-31.56	6.17	9.11	-28.62	-13	-15.62
3 742.23	H	-29.13	6.17	9.11	-26.19	-13	-13.19
5 613.33	V	-46.48	7.56	10.74	-43.30	-13	-30.30
5 613.22	H	-44.65	7.56	10.74	-41.47	-13	-28.47
7 484.46	V	-49.02	9.08	11.87	-46.23	-13	-33.23
7 484.27	H	-51.97	9.08	11.87	-49.18	-13	-36.18
9 355.56	V	-38.92	10.26	12.58	-36.60	-13	-23.60
9 355.49	H	-40.10	10.26	12.58	-37.78	-13	-24.78
High Channel (1 902.5 MHz)							
3 782.15	V	-25.29	6.37	9.15	-22.51	-13	-9.51
3 782.23	H	-28.84	6.37	9.15	-26.06	-13	-13.06
5 672.97	V	-50.04	7.75	11.10	-46.69	-13	-33.69
5 673.23	H	-48.38	7.75	11.11	-45.02	-13	-32.02
7 564.39	V	-48.98	9.09	11.81	-46.26	-13	-33.26
7 564.32	H	-50.45	9.09	11.81	-47.73	-13	-34.73
9 455.65	V	-40.16	10.35	12.54	-37.97	-13	-24.97
9 455.55	H	-42.10	10.35	12.54	-39.91	-13	-26.91

* 20 BW 1RB size / 0 Offset for B2

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- Measured output Power: 19.60 dB m = 0.091 2 W
- Modulation Signal: LTE band 4 (1.4 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 32.60$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 710.7 MHz)							
3 420.52	V	-39.22	5.88	9.27	-35.83	-13	-22.83
3 420.65	H	-44.44	5.88	9.27	-41.05	-13	-28.05
5 130.77	V	-48.18	7.61	10.44	-45.35	-13	-32.35
5 130.65	H	-43.07	7.61	10.44	-40.24	-13	-27.24
6 840.97	V	-41.31	8.69	11.70	-38.30	-13	-25.30
6 840.94	H	-48.89	8.69	11.70	-45.88	-13	-32.88
Middle Channel (1 732.5 MHz)							
3 464.12	V	-42.69	5.92	9.24	-39.37	-13	-26.37
3 464.29	H	-45.64	5.92	9.24	-42.32	-13	-29.32
5 195.87	V	-43.62	7.75	10.60	-40.77	-13	-27.77
5 196.01	H	-38.54	7.75	10.60	-35.69	-13	-22.69
6 928.09	V	-46.62	8.90	11.67	-43.85	-13	-30.85
High Channel (1 754.3 MHz)							
3 507.72	V	-42.43	5.94	9.22	-39.15	-13	-26.15
3 507.65	H	-40.80	5.94	9.22	-37.52	-13	-24.52
5 261.58	V	-45.06	7.68	10.71	-42.03	-13	-29.03
5 261.29	H	-39.88	7.68	10.71	-36.85	-13	-23.85
7 015.64	V	-47.39	8.98	11.67	-44.70	-13	-31.70
7 015.22	H	-49.44	8.98	11.67	-46.75	-13	-33.75
8 769.12	V	-43.84	9.83	12.20	-41.47	-13	-28.47

* 1.4 BW 1RB size / 0 Offset for B4

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- Measured output Power: 19.76 dB m = 0.094 6 W
- Modulation Signal: LTE band 4 (3 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 32.76$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 711.5 MHz)							
3 420.52	V	-38.76	5.88	9.27	-35.37	-13	-22.37
3 420.43	H	-44.74	5.88	9.27	-41.35	-13	-28.35
5 130.78	V	-47.72	7.61	10.44	-44.89	-13	-31.89
5 130.93	H	-41.99	7.61	10.45	-39.15	-13	-26.15
6 841.13	V	-40.28	8.70	11.70	-37.28	-13	-24.28
6 840.94	H	-48.10	8.69	11.70	-45.09	-13	-32.09
Middle Channel (1 732.5 MHz)							
3 462.64	V	-43.87	5.92	9.24	-40.55	-13	-27.55
3 462.36	H	-44.24	5.92	9.24	-40.92	-13	-27.92
5 193.70	V	-43.04	7.75	10.60	-40.19	-13	-27.19
5 193.70	H	-39.09	7.75	10.60	-36.24	-13	-23.24
6 925.16	V	-44.75	8.90	11.66	-41.99	-13	-28.99
6 924.71	H	-50.15	8.90	11.66	-47.39	-13	-34.39
High Channel (1 753.5 MHz)							
3 504.49	V	-41.57	5.94	9.22	-38.29	-13	-25.29
3 504.38	H	-41.54	5.94	9.22	-38.26	-13	-25.26
5 256.78	V	-39.56	7.69	10.70	-36.55	-13	-23.55
5 256.70	H	-39.41	7.69	10.70	-36.40	-13	-23.40
7 008.72	V	-46.01	8.99	11.69	-43.31	-13	-30.31
7 008.98	H	-48.98	8.99	11.69	-46.28	-13	-33.28
8 761.12	V	-43.15	9.83	12.21	-40.77	-13	-27.77

* 3 BW 1RB size / 0 Offset for B4

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- Measured output Power: 18.72 dB m = 0.074 5 W
- Modulation Signal: LTE band 4 (5 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 31.72$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 712.5 MHz)							
3 420.75	V	-38.19	5.88	9.27	-34.80	-13	-21.80
3 420.78	H	-43.53	5.88	9.27	-40.14	-13	-27.14
5 130.86	V	-47.33	7.61	10.45	-44.49	-13	-31.49
5 130.84	H	-42.36	7.61	10.45	-39.52	-13	-26.52
6 841.43	V	-40.23	8.70	11.70	-37.23	-13	-24.23
6 841.35	H	-47.87	8.70	11.70	-44.87	-13	-31.87
Middle Channel (1 732.5 MHz)							
3 460.72	V	-42.85	5.91	9.24	-39.52	-13	-26.52
3 460.67	H	-44.99	5.91	9.24	-41.66	-13	-28.66
5 191.10	V	-43.63	7.74	10.59	-40.78	-13	-27.78
5 190.96	H	-38.54	7.74	10.59	-35.69	-13	-22.69
6 921.32	V	-44.81	8.89	11.66	-42.04	-13	-29.04
High Channel (1 752.5 MHz)							
3 500.70	V	-41.77	5.95	9.21	-38.51	-13	-25.51
3 500.78	H	-40.87	5.95	9.21	-37.61	-13	-24.61
5 251.06	V	-41.00	7.69	10.69	-38.00	-13	-25.00
5 251.00	H	-40.26	7.69	10.69	-37.26	-13	-24.26
7 001.35	V	-45.39	9.01	11.71	-42.69	-13	-29.69
7 001.35	H	-48.30	9.01	11.71	-45.60	-13	-32.60
8 751.67	V	-42.43	9.83	12.22	-40.04	-13	-27.04

* 5 BW 1RB size / 0 Offset for B4

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

- Measured output Power: 18.78 dB m = 0.075 5 W
- Modulation Signal: LTE band 4 (10 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 31.78$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 715.0 MHz)							
3 421.12	V	-36.70	5.88	9.27	-33.31	-13	-20.31
3 421.13	H	-44.57	5.88	9.27	-41.18	-13	-28.18
5 131.60	V	-48.70	7.61	10.45	-45.86	-13	-32.86
5 131.64	H	-44.25	7.61	10.45	-41.41	-13	-28.41
6 842.26	V	-41.32	8.70	11.70	-38.32	-13	-25.32
6 842.15	H	-49.09	8.70	11.70	-46.09	-13	-33.09
Middle Channel (1 732.5 MHz)							
3 455.99	V	-38.29	5.91	9.24	-34.96	-13	-21.96
3 456.16	H	-42.64	5.91	9.24	-39.31	-13	-26.31
5 184.15	V	-43.24	7.73	10.57	-40.40	-13	-27.40
5 184.26	H	-37.74	7.73	10.57	-34.90	-13	-21.90
6 912.16	V	-43.97	8.88	11.65	-41.20	-13	-28.20
6 912.85	H	-50.15	8.88	11.66	-47.37	-13	-34.37
High Channel (1 750.0 MHz)							
3 491.22	V	-38.67	5.94	9.22	-35.39	-13	-22.39
3 491.20	H	-43.79	5.94	9.22	-40.51	-13	-27.51
5 236.81	V	-44.43	7.71	10.67	-41.47	-13	-28.47
5 236.51	H	-44.88	7.71	10.67	-41.92	-13	-28.92
6 982.41	V	-45.27	8.98	11.70	-42.55	-13	-29.55
6 981.88	H	-48.89	8.98	11.70	-46.17	-13	-33.17

* 10 BW 1RB size / 0 Offset for B4

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

- Measured output Power: 18.24 dB m = 0.066 7 W
- Modulation Signal: LTE band 4 (15 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 31.24$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 717.5 MHz)							
3 421.78	V	-39.19	5.88	9.26	-35.81	-13	-22.81
3 421.78	H	-43.56	5.88	9.26	-40.18	-13	-27.18
5 132.70	V	-49.15	7.61	10.45	-46.31	-13	-33.31
5 132.55	H	-42.28	7.61	10.45	-39.44	-13	-26.44
6 843.24	V	-40.09	8.70	11.69	-37.10	-13	-24.10
6 843.17	H	-47.81	8.70	11.69	-44.82	-13	-31.82
Middle Channel (1 732.5 MHz)							
3 451.75	V	-42.17	5.91	9.24	-38.84	-13	-25.84
3 451.64	H	-44.68	5.91	9.24	-41.35	-13	-28.35
5 177.55	V	-45.19	7.71	10.56	-42.34	-13	-29.34
5 177.26	H	-39.30	7.71	10.56	-36.45	-13	-23.45
6 903.52	V	-42.96	8.87	11.65	-40.18	-13	-27.18
High Channel (1 747.5 MHz)							
3 481.70	V	-42.85	5.93	9.22	-39.56	-13	-26.56
3 481.55	H	-42.34	5.93	9.22	-39.05	-13	-26.05
5 222.32	V	-44.02	7.73	10.65	-41.10	-13	-28.10
5 222.49	H	-41.58	7.73	10.65	-38.66	-13	-25.66
6 963.49	V	-45.32	8.96	11.69	-42.59	-13	-29.59

* 15 BW 1RB size / 0 Offset for B4

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- Measured output Power: 17.89 dB m = 0.061 5 W
- Modulation Signal: LTE band 4 (20 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 30.89$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 720.0 MHz)							
3 422.20	V	-39.00	5.88	9.26	-35.62	-13	-22.62
3 422.26	H	-43.75	5.88	9.26	-40.37	-13	-27.37
5 133.15	V	-47.87	7.61	10.45	-45.03	-13	-32.03
5 133.20	H	-41.86	7.61	10.45	-39.02	-13	-26.02
6 844.35	V	-38.29	8.70	11.69	-35.30	-13	-22.30
6 844.46	H	-47.33	8.70	11.69	-44.34	-13	-31.34
Middle Channel (1 732.5 MHz)							
3 447.06	V	-37.51	5.90	9.25	-34.16	-13	-21.16
3 447.06	H	-44.19	5.90	9.25	-40.84	-13	-27.84
5 170.72	V	-45.77	7.70	10.54	-42.93	-13	-29.93
5 170.07	H	-39.69	7.69	10.54	-36.84	-13	-23.84
6 894.58	V	-42.71	8.84	11.65	-39.90	-13	-26.90
High Channel (1 745.0 MHz)							
3 472.23	V	-43.35	5.93	9.23	-40.05	-13	-27.05
3 472.35	H	-45.87	5.93	9.23	-42.57	-13	-29.57
5 208.38	V	-43.12	7.75	10.62	-40.25	-13	-27.25
5 208.29	H	-39.58	7.75	10.62	-36.71	-13	-23.71
6 944.49	V	-46.66	8.93	11.68	-43.91	-13	-30.91

* 20 BW 1RB size / 0 Offset for B4

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

- Measured output Power: 16.79 dB m = 0.047 8 W
- Modulation Signal: LTE band 5 (1.4 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.79$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (824.7 MHz)							
1 648.48	V	-44.00	4.01	5.99	-42.02	-13	-29.02
1 648.58	H	-44.70	4.01	5.99	-42.72	-13	-29.72
2 472.61	V	-41.68	4.80	7.01	-39.47	-13	-26.47
2 472.78	H	-37.62	4.80	7.01	-35.41	-13	-22.41
3 297.10	V	-40.37	5.52	6.69	-39.20	-13	-26.20
3 297.06	H	-43.97	5.52	6.69	-42.80	-13	-29.80
4 121.17	V	-53.98	6.70	7.15	-53.53	-13	-40.53
4 121.14	H	-46.13	6.70	7.15	-45.68	-13	-32.68
6 593.97	V	-40.04	8.31	9.16	-39.19	-13	-26.19
6 593.65	H	-40.36	8.31	9.16	-39.51	-13	-26.51
Middle Channel (836.5 MHz)							
1 672.00	V	-42.98	4.06	6.17	-40.87	-13	-27.87
1 672.17	H	-44.70	4.06	6.17	-42.59	-13	-29.59
2 508.03	V	-41.78	4.82	6.97	-39.63	-13	-26.63
2 508.17	H	-36.35	4.82	6.97	-34.20	-13	-21.20
3 344.32	V	-40.27	5.68	6.89	-39.06	-13	-26.06
3 344.17	H	-43.03	5.68	6.89	-41.82	-13	-28.82
4 180.29	V	-52.70	6.82	7.10	-52.42	-13	-39.42
4 180.17	H	-48.32	6.82	7.10	-48.04	-13	-35.04
6 688.41	V	-42.97	8.30	9.23	-42.04	-13	-29.04
6 688.52	H	-42.72	8.30	9.23	-41.79	-13	-28.79

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (848.3 MHz)							
1 695.64	V	-41.51	4.11	6.35	-39.27	-13	-26.27
1 695.55	H	-45.36	4.11	6.35	-43.12	-13	-30.12
2 543.55	V	-43.81	4.87	6.89	-41.79	-13	-28.79
2 543.61	H	-39.47	4.87	6.89	-37.45	-13	-24.45
3 391.29	V	-41.87	5.83	7.09	-40.61	-13	-27.61
3 391.32	H	-43.98	5.83	7.09	-42.72	-13	-29.72
4 239.48	V	-50.01	6.91	7.02	-49.90	-13	-36.90
4 238.84	H	-50.55	6.91	7.02	-50.44	-13	-37.44
6 782.86	V	-42.28	8.53	9.52	-41.29	-13	-28.29
6 782.77	H	-46.37	8.53	9.52	-45.38	-13	-32.38

* 1.4 BW 1RB size / 0 Offset for B5

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

- Measured output Power: 16.51 dB m = 0.044 8 W
- Modulation Signal: LTE band 5 (3 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.51$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (825.5 MHz)							
1 648.49	V	-44.02	4.01	5.99	-42.04	-13	-29.04
1 648.43	H	-43.41	4.01	5.99	-41.43	-13	-28.43
2 472.67	V	-39.76	4.80	7.01	-37.55	-13	-24.55
2 472.75	H	-35.92	4.80	7.01	-33.71	-13	-20.71
3 297.14	V	-40.38	5.52	6.69	-39.21	-13	-26.21
3 296.77	H	-42.09	5.52	6.69	-40.92	-13	-27.92
4 121.06	H	-47.00	6.70	7.15	-46.55	-13	-33.55
6 593.64	V	-40.64	8.31	9.16	-39.79	-13	-26.79
6 594.01	H	-40.53	8.31	9.16	-39.68	-13	-26.68
Middle Channel (836.5 MHz)							
1 670.51	V	-43.20	4.06	6.16	-41.10	-13	-28.10
1 670.38	H	-44.66	4.05	6.15	-42.56	-13	-29.56
2 505.64	V	-40.70	4.82	6.98	-38.54	-13	-25.54
2 505.78	H	-36.33	4.82	6.98	-34.17	-13	-21.17
3 340.84	V	-40.87	5.66	6.88	-39.65	-13	-26.65
3 340.78	H	-43.16	5.66	6.88	-41.94	-13	-28.94
4 176.12	V	-52.42	6.81	7.10	-52.13	-13	-39.13
4 176.38	H	-48.28	6.81	7.10	-47.99	-13	-34.99
6 681.78	V	-42.79	8.30	9.22	-41.87	-13	-28.87
6 681.68	H	-42.86	8.30	9.22	-41.94	-13	-28.94

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (847.5 MHz)							
1 692.52	V	-41.99	4.10	6.32	-39.77	-13	-26.77
1 692.55	H	-45.13	4.10	6.32	-42.91	-13	-29.91
2 538.39	V	-44.14	4.86	6.90	-42.10	-13	-29.10
2 538.61	H	-39.98	4.86	6.90	-37.94	-13	-24.94
3 384.84	V	-41.81	5.81	7.06	-40.56	-13	-27.56
3 384.78	H	-44.53	5.81	7.06	-43.28	-13	-30.28
4 231.64	V	-50.63	6.90	7.03	-50.50	-13	-37.50
4 231.58	H	-49.51	6.90	7.03	-49.38	-13	-36.38
6 769.91	V	-42.87	8.50	9.48	-41.89	-13	-28.89
6 770.06	V	-46.48	8.50	9.48	-45.50	-13	-32.50

* 3 BW 1RB size / 0 Offset for B5

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

- Measured output Power: 16.39 dB m = 0.043 6 W
- Modulation Signal: LTE band 5 (5 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.39$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (826.5 MHz)							
1 648.58	V	-43.64	4.01	5.99	-41.66	-13	-28.66
1 648.67	H	-43.44	4.01	5.99	-41.46	-13	-28.46
2 473.03	V	-39.65	4.80	7.01	-37.44	-13	-24.44
2 472.93	H	-36.46	4.80	7.01	-34.25	-13	-21.25
3 297.61	V	-40.27	5.53	6.70	-39.10	-13	-26.10
3 297.32	H	-42.38	5.52	6.69	-41.21	-13	-28.21
4 121.84	V	-53.73	6.70	7.15	-53.28	-13	-40.28
4 121.78	H	-46.36	6.70	7.15	-45.91	-13	-32.91
6 594.84	V	-40.44	8.31	9.15	-39.60	-13	-26.60
6 594.75	H	-40.24	8.31	9.15	-39.40	-13	-26.40
Middle Channel (836.5 MHz)							
1 668.55	V	-43.07	4.05	6.14	-40.98	-13	-27.98
1 668.67	H	-44.45	4.05	6.14	-42.36	-13	-29.36
2 503.06	V	-41.02	4.81	6.98	-38.85	-13	-25.85
2 503.09	H	-36.58	4.81	6.98	-34.41	-13	-21.41
3 337.29	V	-40.88	5.65	6.86	-39.67	-13	-26.67
3 337.43	H	-43.05	5.65	6.86	-41.84	-13	-28.84
4 171.52	V	-51.54	6.80	7.11	-51.23	-13	-38.23
4 171.64	H	-47.19	6.80	7.11	-46.88	-13	-33.88
6 674.80	V	-42.16	8.30	9.22	-41.24	-13	-28.24
6 674.43	H	-42.45	8.30	9.22	-41.53	-13	-28.53

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (846.5 MHz)							
1 688.72	V	-41.37	4.10	6.29	-39.18	-13	-26.18
1 688.75	H	-45.47	4.10	6.29	-43.28	-13	-30.28
2 533.01	V	-44.63	4.86	6.91	-42.58	-13	-29.58
2 533.06	H	-40.42	4.86	6.91	-38.37	-13	-25.37
3 377.32	V	-41.70	5.79	7.03	-40.46	-13	-27.46
3 377.35	H	-44.77	5.79	7.03	-43.53	-13	-30.53
4 221.75	V	-50.64	6.89	7.05	-50.48	-13	-37.48
4 221.90	H	-49.88	6.89	7.05	-49.72	-13	-36.72
6 754.72	V	-42.97	8.45	9.43	-41.99	-13	-28.99
6 754.52	V	-46.19	8.45	9.43	-45.21	-13	-32.21

* 5 BW 1RB size / 0 Offset for B5

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

- Measured output Power: 16.84 dB m = 0.048 3 W
- Modulation Signal: LTE band 5 (10 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.84$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (829.0 MHz)							
1 649.23	V	-42.96	4.01	5.99	-40.98	-13	-27.98
1 649.14	H	-42.78	4.01	5.99	-40.80	-13	-27.80
2 473.78	V	-39.84	4.80	7.01	-37.63	-13	-24.63
2 473.49	H	-35.97	4.80	7.01	-33.76	-13	-20.76
3 298.38	V	-39.76	5.53	6.70	-38.59	-13	-25.59
3 298.23	H	-40.86	5.53	6.70	-39.69	-13	-26.69
4 123.07	V	-53.34	6.71	7.15	-52.90	-13	-39.90
4 123.10	H	-45.90	6.71	7.15	-45.46	-13	-32.46
6 596.84	V	-39.78	8.30	9.15	-38.93	-13	-25.93
6 596.75	H	-39.55	8.30	9.15	-38.70	-13	-25.70
Middle Channel (836.5 MHz)							
1 664.14	V	-43.17	4.04	6.11	-41.10	-13	-28.10
1 664.09	H	-44.15	4.04	6.11	-42.08	-13	-29.08
2 496.38	V	-43.01	4.81	6.99	-40.83	-13	-27.83
2 496.29	H	-38.08	4.81	6.99	-35.90	-13	-22.90
3 328.17	V	-40.18	5.62	6.82	-38.98	-13	-25.98
3 328.32	H	-42.62	5.62	6.82	-41.42	-13	-28.42
4 160.55	V	-52.23	6.78	7.12	-51.89	-13	-38.89
4 160.58	H	-47.14	6.78	7.12	-46.80	-13	-33.80
6 656.81	V	-41.87	8.30	9.20	-40.97	-13	-27.97
6 656.52	V	-41.44	8.30	9.20	-40.54	-13	-27.54

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (844.0 MHz)							
1 679.26	V	-43.27	4.07	6.22	-41.12	-13	-28.12
1 679.09	H	-46.03	4.07	6.22	-43.88	-13	-30.88
2 518.64	V	-41.93	4.84	6.95	-39.82	-13	-26.82
2 518.69	H	-36.82	4.84	6.95	-34.71	-13	-21.71
3 358.35	V	-41.79	5.72	6.95	-40.56	-13	-27.56
3 358.43	H	-44.46	5.72	6.95	-43.23	-13	-30.23
4 198.04	V	-52.76	6.86	7.09	-52.53	-13	-39.53
4 197.98	H	-50.14	6.86	7.09	-49.91	-13	-36.91
6 716.90	V	-42.26	8.35	9.30	-41.31	-13	-28.31
6 716.64	H	-44.39	8.35	9.30	-43.44	-13	-30.44

* 10 BW 1RB size / 0 Offset for B5

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

- Measured output Power: 16.38 dB m = 0.043 5 W
- Modulation Signal: LTE band 12 (1.4 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.38$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (699.7 MHz)							
1 398.41	V	-41.83	3.57	6.13	-39.27	-13	-26.27
1 398.46	H	-39.21	3.57	6.13	-36.65	-13	-23.65
2 097.70	V	-43.90	4.53	6.38	-42.05	-13	-29.05
2 097.67	H	-37.39	4.53	6.38	-35.54	-13	-22.54
2 796.96	V	-42.94	4.98	7.57	-40.35	-13	-27.35
2 796.01	H	-48.55	4.98	7.57	-45.96	-13	-32.96
3 496.32	V	-49.61	5.95	7.06	-48.50	-13	-35.50
3 496.27	H	-47.02	5.95	7.06	-45.91	-13	-32.91
Middle Channel (707.5 MHz)							
1 413.97	V	-43.29	3.58	6.08	-40.79	-13	-27.79
1 414.06	H	-39.19	3.58	6.08	-36.69	-13	-23.69
2 121.26	V	-39.29	4.55	6.44	-37.40	-13	-24.40
2 121.06	H	-35.64	4.55	6.44	-33.75	-13	-20.75
2 828.26	V	-41.25	5.03	7.56	-38.72	-13	-25.72
2 828.41	H	-46.91	5.03	7.56	-44.38	-13	-31.38
3 535.00	V	-52.08	5.88	7.12	-50.84	-13	-37.84
3 535.43	H	-48.25	5.88	7.12	-47.01	-13	-34.01

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (715.3 MHz)							
1 429.52	V	-44.54	3.60	6.02	-42.12	-13	-29.12
1 429.67	H	-41.17	3.60	6.02	-38.75	-13	-25.75
2 144.52	V	-39.40	4.57	6.47	-37.50	-13	-24.50
2 144.35	H	-36.79	4.57	6.47	-34.89	-13	-21.89
2 859.29	V	-40.24	5.09	7.52	-37.81	-13	-24.81
2 859.46	H	-43.35	5.09	7.52	-40.92	-13	-27.92
3 574.15	V	-50.78	5.81	7.19	-49.40	-13	-36.40
3 574.38	H	-46.63	5.81	7.19	-45.25	-13	-32.25

* 1.4 BW 1RB size / 0 Offset for B12

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

- Measured output Power: 16.72 dB m = 0.047 0 W
- Modulation Signal: LTE band 12 (3 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.72$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (700.5 MHz)							
1 398.55	V	-39.79	3.57	6.13	-37.23	-13	-24.23
1 398.49	H	-37.58	3.57	6.13	-35.02	-13	-22.02
2 097.84	V	-43.75	4.53	6.39	-41.89	-13	-28.89
2 097.58	H	-36.33	4.53	6.38	-34.48	-13	-21.48
2 796.98	V	-42.35	4.98	7.57	-39.76	-13	-26.76
2 796.97	H	-47.58	4.98	7.57	-44.99	-13	-31.99
3 496.39	V	-49.26	5.95	7.06	-48.15	-13	-35.15
3 496.03	H	-47.88	5.95	7.06	-46.77	-13	-33.77
Middle Channel (707.5 MHz)							
1 412.52	V	-43.52	3.58	6.08	-41.02	-13	-28.02
1 412.52	H	-39.28	3.58	6.08	-36.78	-13	-23.78
2 118.81	V	-44.59	4.55	6.43	-42.71	-13	-29.71
2 118.75	H	-35.36	4.55	6.43	-33.48	-13	-20.48
2 824.94	V	-41.01	5.02	7.56	-38.47	-13	-25.47
2 825.04	H	-44.97	5.03	7.56	-42.44	-13	-29.44
3 531.20	V	-52.24	5.89	7.12	-51.01	-13	-38.01
3 531.12	H	-48.33	5.89	7.12	-47.10	-13	-34.10

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (714.5 MHz)							
1 426.35	V	-44.62	3.60	6.03	-42.19	-13	-29.19
1 426.43	H	-41.11	3.60	6.03	-38.68	-13	-25.68
2 139.81	V	-40.21	4.57	6.47	-38.31	-13	-25.31
2 139.77	H	-36.86	4.57	6.47	-34.96	-13	-21.96
2 853.15	V	-41.39	5.08	7.53	-38.94	-13	-25.94
2 852.87	H	-44.03	5.08	7.53	-41.58	-13	-28.58
3 566.32	V	-52.91	5.82	7.18	-51.55	-13	-38.55
3 566.20	H	-46.92	5.82	7.18	-45.56	-13	-32.56

* 3 BW 1RB size / 0 Offset for B12

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

- Measured output Power: 16.95 dB m = 0.049 5 W
- Modulation Signal: LTE band 12 (5 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.95$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (701.5 MHz)							
1 398.70	V	-39.85	3.57	6.13	-37.29	-13	-24.29
1 398.75	H	-37.74	3.57	6.13	-35.18	-13	-22.18
2 098.09	V	-43.11	4.53	6.39	-41.25	-13	-28.25
2 098.15	H	-36.91	4.53	6.39	-35.05	-13	-22.05
2 797.58	V	-43.06	4.98	7.58	-40.46	-13	-27.46
2 797.32	H	-48.76	4.98	7.58	-46.16	-13	-33.16
3 496.84	V	-49.70	5.95	7.06	-48.59	-13	-35.59
3 496.75	H	-47.24	5.95	7.06	-46.13	-13	-33.13
Middle Channel (707.5 MHz)							
1 410.58	V	-42.89	3.58	6.09	-40.38	-13	-27.38
1 410.70	H	-39.19	3.58	6.09	-36.68	-13	-23.68
2 116.01	V	-40.20	4.55	6.43	-38.32	-13	-25.32
2 116.09	H	-36.03	4.55	6.43	-34.15	-13	-21.15
2 821.26	V	-42.42	5.02	7.57	-39.87	-13	-26.87
2 821.43	H	-46.24	5.02	7.57	-43.69	-13	-30.69
3 526.75	V	-51.36	5.90	7.11	-50.15	-13	-37.15
3 526.93	H	-47.79	5.90	7.11	-46.58	-13	-33.58

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (713.5 MHz)							
1 422.67	V	-44.26	3.59	6.05	-41.80	-13	-28.80
1 422.61	H	-42.56	3.59	6.05	-40.10	-13	-27.10
2 133.94	V	-40.27	4.56	6.46	-38.37	-13	-25.37
2 134.00	H	-36.67	4.56	6.46	-34.77	-13	-21.77
2 845.35	V	-40.24	5.06	7.54	-37.76	-13	-24.76
2 845.26	H	-44.23	5.06	7.54	-41.75	-13	-28.75
3 556.96	V	-52.75	5.84	7.16	-51.43	-13	-38.43
3 556.46	H	-48.67	5.84	7.16	-47.35	-13	-34.35

* 5 BW 1RB size / 0 Offset for B12

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

- Measured output Power: 16.75 dB m = 0.047 3 W
- Modulation Signal: LTE band 12 (10 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.75$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (704.0 MHz)							
1 399.03	V	-40.54	3.57	6.13	-37.98	-13	-24.98
1 399.23	H	-37.85	3.57	6.13	-35.29	-13	-22.29
2 098.78	V	-42.95	4.53	6.39	-41.09	-13	-28.09
2 098.93	H	-37.59	4.53	6.39	-35.73	-13	-22.73
2 798.17	V	-42.70	4.98	7.58	-40.10	-13	-27.10
2 798.38	H	-49.12	4.98	7.58	-46.52	-13	-33.52
3 498.00	V	-50.69	5.95	7.06	-49.58	-13	-36.58
3 498.03	H	-48.13	5.95	7.06	-47.02	-13	-34.02
Middle Channel (707.5 MHz)							
1 406.17	V	-43.06	3.58	6.11	-40.53	-13	-27.53
1 406.15	H	-40.14	3.58	6.11	-37.61	-13	-24.61
2 109.26	V	-43.07	4.54	6.42	-41.19	-13	-28.19
2 109.23	H	-38.28	4.54	6.42	-36.40	-13	-23.40
2 812.32	V	-43.09	5.00	7.58	-40.51	-13	-27.51
2 812.46	H	-48.15	5.00	7.58	-45.57	-13	-32.57
3 515.58	V	-52.07	5.92	7.09	-50.90	-13	-37.90
3 515.78	H	-47.96	5.92	7.09	-46.79	-13	-33.79

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (711.0 MHz)							
1 413.06	V	-43.82	3.58	6.08	-41.32	-13	-28.32
1 413.15	H	-39.64	3.58	6.08	-37.14	-13	-24.14
2 119.72	V	-40.05	4.55	6.43	-38.17	-13	-25.17
2 119.81	H	-35.86	4.55	6.43	-33.98	-13	-20.98
2 826.55	V	-41.50	5.03	7.56	-38.97	-13	-25.97
2 826.23	H	-45.32	5.03	7.56	-42.79	-13	-29.79
3 532.83	V	-52.08	5.89	7.12	-50.85	-13	-37.85
3 533.13	H	-48.55	5.89	7.12	-47.32	-13	-34.32

* 10 BW 1RB size / 0 Offset for B12

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

- Measured output Power: 17.24 dB m = 0.053 0 W
- Modulation Signal: LTE band 13 (5 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 30.24$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (779.5 MHz)							
1 554.29	V	-54.56	3.79	5.68	-52.67	-13	-39.67
1 554.52	H	-51.68	3.80	5.68	-49.80	-13	-36.80
2 331.97	V	-41.53	4.75	7.08	-39.20	-13	-26.20
2 332.00	H	-46.46	4.75	7.08	-44.13	-13	-31.13
3 109.55	V	-42.32	5.32	6.29	-41.35	-13	-28.35
3 109.32	H	-38.13	5.32	6.29	-37.16	-13	-24.16
3 887.13	V	-48.46	6.71	6.94	-48.23	-13	-35.23
3 886.64	H	-52.18	6.71	6.94	-51.95	-13	-38.95
Middle Channel (782.0 MHz)							
1 559.43	V	-56.47	3.81	5.67	-54.61	-13	-41.61
1 559.41	H	-52.99	3.81	5.67	-51.13	-13	-38.13
2 339.32	V	-47.32	4.76	7.08	-45.00	-13	-32.00
2 339.52	H	-52.42	4.76	7.08	-50.10	-13	-37.10
3 119.23	V	-53.24	5.32	6.31	-52.25	-13	-39.25
3 119.35	H	-48.28	5.32	6.31	-47.29	-13	-34.29
High Channel (784.5 MHz)							
1 564.72	V	-56.27	3.82	5.67	-54.42	-13	-41.42
1 564.75	H	-52.54	3.82	5.67	-50.69	-13	-37.69
2 347.03	V	-49.51	4.76	7.08	-47.19	-13	-34.19
2 347.17	H	-52.82	4.76	7.08	-50.50	-13	-37.50
3 129.12	V	-54.38	5.33	6.33	-53.38	-13	-40.38
3 129.41	H	-50.37	5.33	6.33	-49.37	-13	-36.37

* 5 BW 1RB size / 0 Offset for B13

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- Measured output Power: 16.39 dB m = 0.043 6 W
- Modulation Signal: LTE band 13 (10 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 29.39$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Middle Channel (782.0 MHz)							
1 555.12	V	-56.80	3.80	5.68	-54.92	-13	-41.92
1 555.26	H	-54.29	3.80	5.68	-52.41	-13	-39.41
2 332.72	V	-44.79	4.75	7.08	-42.46	-13	-29.46
2 332.93	H	-50.46	4.75	7.08	-48.13	-13	-35.13
3 110.23	V	-47.40	5.32	6.29	-46.43	-13	-33.43
3 110.23	H	-43.65	5.32	6.29	-42.68	-13	-29.68

* 10 BW 1RB size / 0 Offset for B13

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

- Measured output Power: 17.10 dB m = 0.051 3 W
- Modulation Signal: LTE band 17 (5 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 30.10$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (706.5 MHz)							
1 408.61	V	-40.76	3.58	6.10	-38.24	-13	-25.24
1 408.67	H	-37.17	3.58	6.10	-34.65	-13	-21.65
2 113.12	V	-38.80	4.54	6.42	-36.92	-13	-23.92
2 113.12	H	-34.45	4.54	6.42	-32.57	-13	-19.57
2 817.41	V	-40.90	5.01	7.57	-38.34	-13	-25.34
2 817.38	H	-44.01	5.01	7.57	-41.45	-13	-28.45
3 521.72	V	-52.19	5.91	7.10	-51.00	-13	-38.00
3 521.96	H	-48.72	5.91	7.10	-47.53	-13	-34.53
Middle Channel (710.0 MHz)							
1 415.58	V	-44.52	3.59	6.07	-42.04	-13	-29.04
1 415.72	H	-39.21	3.59	6.07	-36.73	-13	-23.73
2 123.43	V	-40.52	4.55	6.44	-38.63	-13	-25.63
2 123.43	H	-35.72	4.55	6.44	-33.83	-13	-20.83
2 831.38	V	-41.33	5.04	7.56	-38.81	-13	-25.81
2 831.43	H	-44.26	5.04	7.56	-41.74	-13	-28.74
3 539.29	V	-52.18	5.88	7.13	-50.93	-13	-37.93
3 539.03	H	-48.77	5.88	7.13	-47.52	-13	-34.52

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (713.5 MHz)							
1 422.58	V	-45.08	3.59	6.05	-42.62	-13	-29.62
1 422.49	H	-40.97	3.59	6.05	-38.51	-13	-25.51
2 134.06	V	-42.26	4.56	6.46	-40.36	-13	-27.36
2 134.09	H	-36.17	4.56	6.46	-34.27	-13	-21.27
2 845.35	V	-40.66	5.06	7.54	-38.18	-13	-25.18
2 845.32	H	-43.90	5.06	7.54	-41.42	-13	-28.42
3 556.93	V	-53.17	5.84	7.16	-51.85	-13	-38.85
3 556.67	H	-48.94	5.84	7.16	-47.62	-13	-34.62

* 5 BW 1RB size / 0 Offset for B17

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

- Measured output Power: 17.49 dB m = 0.056 1 W
- Modulation Signal: LTE band 17 (10 MHz - QPSK)
- Distance: 3 meters
- Limit: $43 + 10\log_{10}(W) = 30.49$ dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (709.0 MHz)							
1 409.23	V	-40.96	3.58	6.10	-38.44	-13	-25.44
1 409.09	H	-37.31	3.58	6.10	-34.79	-13	-21.79
2 113.72	V	-38.62	4.54	6.43	-36.73	-13	-23.73
2 113.72	H	-34.16	4.54	6.43	-32.27	-13	-19.27
2 818.49	V	-40.04	5.01	7.57	-37.48	-13	-24.48
2 818.26	H	-44.07	5.01	7.57	-41.51	-13	-28.51
3 523.07	V	-51.85	5.91	7.10	-50.66	-13	-37.66
3 523.00	H	-48.14	5.91	7.10	-46.95	-13	-33.95
Middle Channel (710.0 MHz)							
1 411.17	V	-43.44	3.58	6.09	-40.93	-13	-27.93
1 411.20	H	-39.21	3.58	6.09	-36.70	-13	-23.70
2 116.75	V	-40.32	4.55	6.43	-38.44	-13	-25.44
2 116.81	H	-35.73	4.55	6.43	-33.85	-13	-20.85
2 822.43	V	-41.72	5.02	7.57	-39.17	-13	-26.17
2 822.41	H	-45.60	5.02	7.57	-43.05	-13	-30.05
3 527.61	V	-52.00	5.90	7.11	-50.79	-13	-37.79
3 528.13	H	-49.61	5.90	7.11	-48.40	-13	-35.40

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Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (711.0 MHz)							
1 413.26	V	-43.72	3.58	6.08	-41.22	-13	-28.22
1 413.23	H	-39.53	3.58	6.08	-37.03	-13	-24.03
2 119.84	V	-41.97	4.55	6.43	-40.09	-13	-27.09
2 119.96	H	-37.36	4.55	6.44	-35.47	-13	-22.47
2 826.29	V	-41.25	5.03	7.56	-38.72	-13	-25.72
2 826.67	H	-46.93	5.03	7.56	-44.40	-13	-31.40
3 533.16	V	-52.75	5.89	7.12	-51.52	-13	-38.52
3 533.01	H	-48.89	5.89	7.12	-47.66	-13	-34.66

* 10 BW 1RB size / 0 Offset for B17

Remark:

1. E.R.P. & E.I.R.P. = S.G level (dB m) - Cable loss (dB) + Ant. gain (dB d/dB i)
2. This device was tested under all bandwidths, RB configurations, and modulations.
3. The data reported in the table above was measured in worst case.

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

3. Conducted Output Power

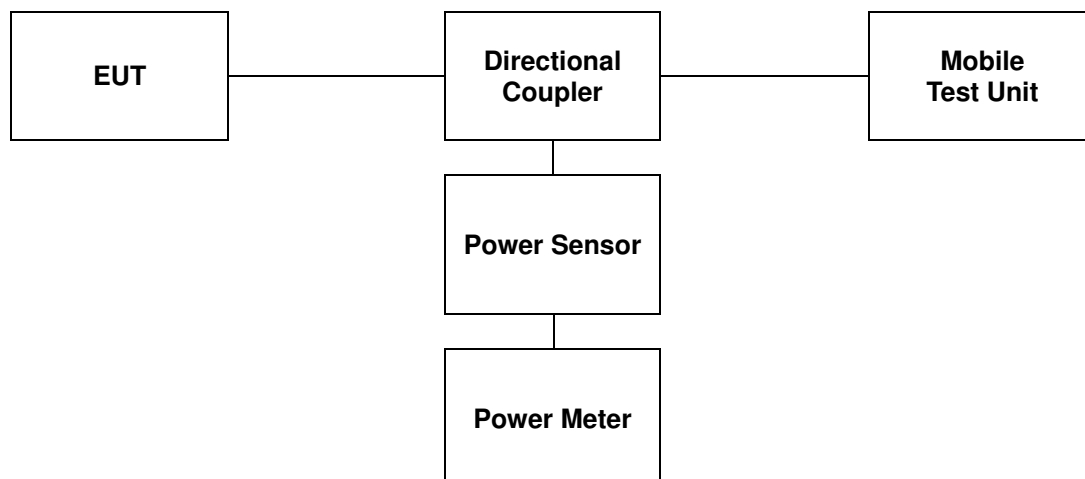
3.1. Limit

CFR 47, Section FCC §2.1046 and IC RSS-Gen Issue 4 6.12.

3.2. Test Procedure

Output power shall be measured at the RF output terminals for all configurations.

1. The RF output of the transmitter was connected to the input of the mobile test unit in order to establish communication with the EUT.
2. The EUT was set up for the max. output power with pseudo random data modulation by using mobile test unit parameters.
3. The measurement performed using a wideband RF power meter.
4. This EUT was tested under all configurations and the highest power was investigated and reported.



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3.3. Test Result

Ambient temperature : (23 ± 1) °C
Relative humidity : 47 % R.H.

- LTE

Band	Bandwidth (MHz)	RB Size	RB Offset	QPSK			16QAM		
				18607	18900	19193	18607	18900	19193
				1 850.7	1 880.0	1 909.3	1 850.7	1 880.0	1 909.3
2	1.4	1	0	22.73	22.75	22.66	21.65	21.74	21.75
		1	3	22.64	22.68	22.58	21.74	21.86	21.42
		1	5	22.57	22.54	22.45	21.66	21.68	21.21
		3	0	22.59	22.66	22.44	21.60	21.71	21.50
		3	2	22.62	22.70	22.55	21.63	21.75	21.34
		3	3	22.66	22.73	22.57	21.65	21.77	21.44
		6	0	21.59	21.63	21.41	20.63	20.60	20.66
	Bandwidth (MHz)	RB Size	RB Offset	18615	18900	19185	18615	18900	19185
				1 851.5	1 880.0	1 908.5	1 851.5	1 880.0	1 908.5
	3	1	0	22.65	22.71	22.73	21.76	21.84	21.88
		1	8	22.60	22.63	22.50	21.77	21.87	21.68
		1	14	22.62	22.55	22.44	21.67	21.78	21.60
		8	0	21.70	21.62	21.51	20.60	20.68	20.61
		8	4	21.60	21.60	21.55	20.66	20.71	20.66
		8	7	21.62	21.56	21.50	20.57	20.62	20.56
		15	0	21.65	21.70	21.60	20.65	20.70	20.76
	Bandwidth (MHz)	RB Size	RB Offset	18625	18900	19175	18625	18900	19175
				1 852.5	1 880.0	1 907.5	1 852.5	1 880.0	1 907.5
	5	1	0	22.84	22.86	22.91	21.95	21.99	22.06
		1	12	22.76	22.90	22.86	21.93	22.00	22.03
		1	24	22.77	22.84	22.79	21.87	21.84	21.90
		12	0	21.70	21.81	21.80	20.60	20.70	20.76
		12	7	21.65	21.77	21.69	20.67	20.71	20.88
		12	13	21.66	21.75	21.74	20.70	20.69	20.85
		25	0	21.69	21.79	21.77	20.71	20.78	20.78
	Bandwidth (MHz)	RB Size	RB Offset	18650	18900	19150	18650	18900	19150
				1 855.0	1 880.0	1 905.0	1 855.0	1 880.0	1 905.0
	10	1	0	22.98	22.96	22.63	22.04	22.10	22.01
		1	25	22.60	22.76	22.66	21.75	21.85	22.02
		1	49	22.78	22.84	22.09	21.96	22.02	21.33
		25	0	21.75	21.88	21.90	20.80	20.80	20.83
		25	12	21.76	21.85	21.91	20.79	20.82	20.84
		25	25	21.75	21.86	21.90	20.83	20.86	20.88
		50	0	21.76	21.88	21.86	20.75	20.84	20.86
	Bandwidth (MHz)	RB Size	RB Offset	18675	18900	19125	18675	18900	19125
				1 857.5	1 880.0	1 902.5	1 857.5	1 880.0	1 902.5
	15	1	0	22.74	22.90	22.81	21.91	22.03	21.99
		1	37	22.80	22.69	22.68	21.92	21.90	21.82
		1	74	22.84	22.81	22.30	22.08	21.98	21.69
		36	0	21.87	21.86	21.86	20.65	20.77	20.84
		36	20	21.85	21.81	21.83	20.71	20.85	20.88
		36	39	21.80	21.78	21.86	20.73	20.80	20.90
		75	0	21.75	21.81	21.90	20.70	20.80	20.89
	Bandwidth (MHz)	RB Size	RB Offset	18700	18900	19100	18700	18900	19100
				1 860.0	1 880.0	1 900.0	1 860.0	1 880.0	1 900.0
	20	1	0	22.94	22.91	22.94	21.95	22.25	22.10
		1	50	22.68	22.55	22.46	21.75	21.66	21.73
		1	99	22.78	22.73	22.49	22.07	22.10	21.89
		50	0	21.87	21.84	21.86	20.88	20.80	20.93
		50	25	21.84	20.80	21.90	20.90	20.84	20.90
		50	50	21.85	21.78	21.91	20.93	20.79	20.94
		100	0	21.91	21.86	21.92	20.91	20.85	20.94

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Band	Bandwidth (MHz)	RB Size	RB Offset	QPSK			16QAM		
				19957	20175	20393	19957	20175	20393
				1 710.7	1 732.5	1 754.3	1 710.7	1 732.5	1 754.3
4	1.4	1	0	22.67	22.58	22.62	21.73	21.62	21.66
		1	3	22.64	22.51	22.60	21.81	21.55	21.71
		1	5	22.61	22.44	22.55	21.65	21.60	21.67
		3	0	22.64	22.53	22.57	21.61	21.65	21.60
		3	2	22.58	22.47	22.60	21.70	21.59	21.62
		3	3	22.60	22.50	22.55	21.66	21.50	21.65
		6	0	21.60	21.44	21.54	20.60	20.43	20.58
	Bandwidth (MHz)	RB Size	RB Offset	19965	20175	20385	19965	20175	20385
				1 711.5	1 732.5	1 753.5	1 711.5	1 732.5	1 753.5
	3	1	0	22.65	22.55	22.70	21.83	21.77	21.75
		1	8	22.62	22.52	22.60	21.77	21.65	21.72
		1	14	22.60	22.49	22.62	21.74	21.63	21.70
		8	0	21.58	21.50	21.65	20.60	20.62	20.66
		8	4	21.63	21.44	21.58	20.58	20.69	20.70
		8	7	21.49	21.45	21.60	20.63	20.58	20.63
		15	0	21.52	21.55	21.63	20.66	20.54	20.62
	Bandwidth (MHz)	RB Size	RB Offset	19975	20175	20375	19975	20175	20375
				1 712.5	1 732.5	1 752.5	1 712.5	1 732.5	1 752.5
	5	1	0	22.85	22.71	22.67	21.95	21.81	21.82
		1	12	22.76	22.63	22.75	21.85	21.75	21.89
		1	24	22.65	22.60	22.72	21.80	21.69	21.88
		12	0	21.65	21.65	21.70	20.70	20.66	20.70
		12	7	21.62	21.59	21.62	20.59	20.64	20.72
		12	13	21.58	21.60	21.58	20.63	20.58	20.64
		25	0	21.68	21.55	21.67	20.67	20.55	20.69
	Bandwidth (MHz)	RB Size	RB Offset	20000	20175	20350	20000	20175	20350
				1 715.0	1 732.5	1 750.0	1 715.0	1 732.5	1 750.0
	10	1	0	22.87	22.84	22.94	22.03	22.00	21.85
		1	25	22.62	22.46	22.60	21.78	21.71	21.78
		1	49	22.85	22.83	22.91	22.00	22.01	22.15
		25	0	21.73	21.65	21.68	20.70	20.76	20.81
		25	12	21.66	21.56	21.65	20.84	20.69	20.77
		25	25	21.69	21.67	21.86	20.66	20.55	20.80
		50	0	21.70	21.69	21.78	20.65	20.62	20.76
	Bandwidth (MHz)	RB Size	RB Offset	20025	20175	20325	20025	20175	20325
				1 717.5	1 732.5	1 747.5	1 717.5	1 732.5	1 747.5
	15	1	0	22.71	22.60	22.68	21.40	21.45	21.30
		1	37	22.70	22.50	22.67	21.80	21.63	21.61
		1	74	22.44	22.23	22.45	21.47	21.44	21.45
		36	0	21.63	21.47	21.52	20.61	20.49	20.48
		36	20	21.70	21.60	21.52	20.58	20.55	20.54
		36	39	21.65	21.54	21.48	22.64	20.50	20.61
		75	0	21.50	21.47	21.46	20.50	20.44	20.45
	Bandwidth (MHz)	RB Size	RB Offset	20050	20175	20300	20050	20175	20300
				1 720.0	1 732.5	1 745.0	1 720.0	1 732.5	1 745.0
	20	1	0	22.63	22.48	22.58	21.40	21.60	21.45
		1	50	22.62	22.40	22.55	21.70	21.50	21.66
		1	99	22.44	22.34	22.47	21.62	21.52	21.47
		50	0	21.46	21.47	21.41	20.59	20.53	20.51
		50	25	21.50	21.50	21.50	20.62	20.48	20.49
		50	50	21.51	21.53	21.44	20.55	20.51	20.44
		100	0	21.48	21.52	21.41	20.35	20.49	20.46

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Band	Bandwidth (MHz)	RB Size	RB Offset	QPSK			16QAM		
				20407	20525	20643	20407	20525	20643
				824.7	836.6	848.3	824.7	836.6	848.3
5	1.4	1	0	23.05	23.02	22.99	22.15	22.10	22.14
		1	3	23.00	23.00	22.96	22.20	22.07	22.11
		1	5	23.01	22.97	22.90	22.24	22.10	22.06
		3	0	22.90	22.98	22.96	22.11	22.05	22.11
		3	2	22.99	22.97	22.98	22.13	22.06	22.09
		3	3	23.01	23.01	22.95	22.20	22.12	22.16
		6	0	22.10	22.01	21.97	21.04	21.01	20.92
	Bandwidth (MHz)	RB Size	RB Offset	20415	20525	20635	20415	20525	20635
				825.5	836.5	847.5	825.5	836.5	847.5
	3	1	0	23.08	23.06	23.03	22.19	22.18	22.25
		1	8	23.04	23.01	23.02	22.17	22.14	22.20
		1	14	23.03	23.00	23.01	22.22	22.17	22.12
		8	0	22.10	22.02	22.02	21.13	21.09	21.10
		8	4	22.09	21.99	22.00	21.10	21.10	21.06
		8	7	22.11	22.05	21.97	21.06	21.13	21.08
		15	0	22.07	22.02	22.00	21.07	21.04	21.03
	Bandwidth (MHz)	RB Size	RB Offset	20425	20525	20625	20425	20525	20625
				826.5	836.5	846.5	826.5	836.5	846.5
	5	1	0	23.16	23.19	23.13	22.20	22.27	22.21
		1	12	23.10	23.12	23.05	22.20	22.24	22.22
		1	24	23.11	23.04	23.10	22.26	22.18	22.26
		12	0	22.10	22.06	22.11	21.16	21.15	21.11
		12	7	22.05	22.01	22.13	21.20	21.14	21.16
		12	13	22.09	22.04	22.06	21.13	21.10	21.13
		25	0	22.01	22.04	22.10	21.03	21.09	21.10
	Bandwidth (MHz)	RB Size	RB Offset	20450	20525	20600	20450	20525	20600
				829.0	836.5	844.0	829.0	836.5	844.0
	10	1	0	23.17	23.06	23.16	22.25	22.13	22.22
		1	25	23.10	23.00	23.13	22.30	22.18	22.35
		1	49	23.15	23.04	23.09	22.31	22.22	22.27
		25	0	22.18	22.07	22.21	21.24	21.23	21.29
		25	12	22.20	22.11	22.18	21.19	21.18	21.24
		25	25	22.21	22.02	22.21	21.22	21.13	21.20
		50	0	22.27	22.11	22.20	21.20	21.08	21.20

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Band	Bandwidth (MHz)	RB Size	RB Offset	QPSK			16QAM		
				23017	23095	23173	23017	23095	23173
				699.7	707.5	715.3	699.7	707.5	715.3
12	1.4	1	0	22.92	22.99	22.94	21.99	22.00	21.87
		1	3	22.90	22.97	22.90	22.00	21.97	21.92
		1	5	22.83	22.90	22.62	21.97	22.06	21.86
		3	0	22.90	22.95	22.87	21.91	21.89	21.84
		3	2	22.89	22.94	22.85	21.90	21.85	21.88
		3	3	22.88	22.93	22.79	21.79	21.96	21.79
		6	0	21.86	21.93	21.75	20.88	20.95	20.74
	Bandwidth (MHz)	RB Size	RB Offset	23025	23095	23165	23025	23095	23165
	3	1	0	22.93	23.01	22.87	22.04	22.10	22.01
		1	8	22.84	23.00	22.85	22.00	22.05	22.03
		1	14	22.91	22.89	22.80	21.96	22.06	22.02
		8	0	21.88	21.90	21.85	20.93	21.00	20.99
		8	4	21.90	21.92	21.88	20.94	20.99	20.97
		8	7	21.92	21.94	21.90	20.89	20.94	21.00
		15	0	21.84	22.00	21.89	20.90	21.02	20.92
	Bandwidth (MHz)	RB Size	RB Offset	23035	23095	23155	23035	23095	23155
	5	1	0	23.07	23.13	23.01	22.14	22.15	22.19
		1	12	23.00	23.09	22.96	22.12	22.22	22.14
		1	24	23.05	22.98	22.95	22.21	22.15	22.15
		12	0	22.10	22.02	22.00	21.02	21.00	21.03
		12	7	22.02	21.99	22.03	20.99	20.95	20.97
		12	13	22.06	21.98	21.94	20.94	21.03	20.96
		25	0	21.93	21.95	21.85	21.00	20.98	20.85
	Bandwidth (MHz)	RB Size	RB Offset	23060	23095	23130	23060	23095	23130
	10	1	0	22.94	23.03	22.96	22.10	22.14	21.97
		1	25	22.85	22.98	22.93	22.00	22.11	22.00
		1	49	22.85	22.96	22.90	22.01	22.05	22.04
		25	0	21.98	22.07	21.95	20.96	20.89	20.90
		25	12	21.95	22.03	21.90	20.90	20.96	20.89
		25	25	21.99	22.06	21.94	20.93	20.92	20.96
		50	0	21.97	22.01	21.96	20.95	20.99	20.95

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Band	Bandwidth (MHz)	RB Size	RB Offset	QPSK			16QAM		
				23205	23230	23255	23205	23230	23255
				779.5	782.0	784.5	779.5	782.0	784.5
13	5	1	0	23.21	23.18	23.06	22.25	22.29	22.10
		1	12	23.11	23.08	23.05	22.34	22.14	22.20
		1	24	23.07	23.01	22.97	22.20	22.15	22.12
		12	0	22.10	22.06	22.03	21.16	21.11	21.15
		12	7	22.11	22.10	22.08	21.06	21.10	21.09
		12	13	22.06	22.13	22.05	21.11	21.06	21.04
		25	0	22.13	22.09	22.00	21.11	21.08	21.03
	Bandwidth (MHz)	RB Size	RB Offset	-	23230	-	-	23230	-
				-	782.0	-	-	782.0	-
	10	1	0	-	22.98	-	-	22.15	-
		1	25		22.94			22.07	
		1	49		22.90			22.09	
		25	0		22.04			21.10	
		25	12		22.06			21.09	
		25	25		22.07			21.04	
		50	0		22.12			21.05	

Band	Bandwidth (MHz)	RB Size	RB Offset	QPSK			16QAM		
				23755	23790	23825	23755	23790	23825
				706.5	710.0	713.5	706.5	710.0	713.5
17	5	1	0	22.94	22.96	22.95	21.96	22.00	21.97
		1	12	22.92	22.94	22.94	22.01	22.08	22.02
		1	24	22.90	22.86	22.81	22.03	21.96	22.01
		12	0	21.88	21.86	21.80	20.96	20.93	20.91
		12	7	21.84	21.88	21.77	20.94	20.95	20.85
		12	13	21.92	21.79	21.79	20.89	20.90	20.84
		25	0	21.78	21.78	21.80	20.88	20.92	20.82
	Bandwidth (MHz)	RB Size	RB Offset	23780	23790	23800	23780	23790	23800
				709.0	710.0	711.0	709.0	710.0	711.0
	10	1	0	22.92	22.83	22.76	22.02	21.82	21.93
		1	25	22.82	22.84	22.77	22.00	21.97	21.90
		1	49	22.90	22.86	22.88	22.03	22.00	21.97
		25	0	21.90	21.81	21.93	20.95	20.77	20.85
		25	12	21.88	21.85	21.90	20.87	20.84	20.79
		25	25	21.92	21.90	21.87	20.91	20.85	20.84
		50	0	22.01	21.85	21.91	20.98	20.81	20.87

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4. Occupied Bandwidth 99 %

4.1. Limit

CFR 47, Section FCC §2.1049 and IC RSS-Gen Issue 4 6.6.

4.2. Test Procedure

FCC

The test follows section 4.2 of FCC KDB Publication 971168 D01 v02r02.

1. Set span = 2 – 5 x OBW.
2. Set resolution bandwidth (RBW) = 1 – 5 % of OBW.
3. Set video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.

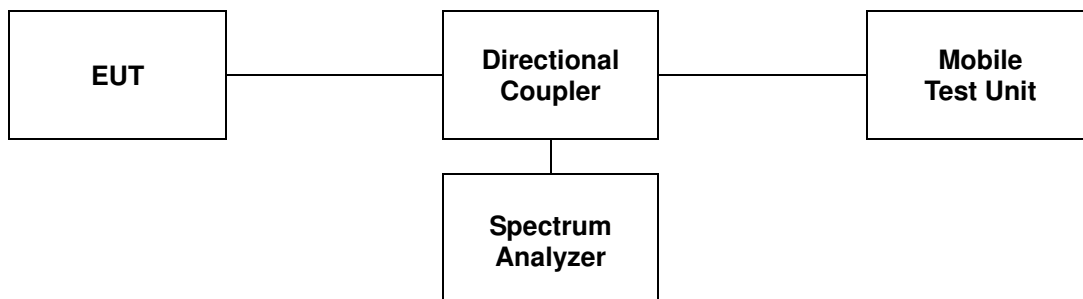
IC

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3xRBW. Detector = sampling, Trace mode = max hold.

The trace data points are recovered and are directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency).

This frequency is then recorded.



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4.3 Test Results

Ambient temperature : (23 ± 1) °C

Relative humidity : 47 % R.H.

- LTE

Band	Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	
			FCC	IC
2 (1.4 MHz)	QPSK	1 850.7	1.099	1.091
		1 880.0	1.096	1.089
		1 909.3	1.092	1.093
2 (1.4 MHz)	16QAM	1 850.7	1.100	1.091
		1 880.0	1.094	1.089
		1 909.3	1.095	1.094
2 (3 MHz)	QPSK	1 851.5	2.743	2.737
		1 880.0	2.742	2.741
		1 908.5	2.755	2.744
2 (3 MHz)	16QAM	1 851.5	2.744	2.742
		1 880.0	2.747	2.743
		1 908.5	2.735	2.738
2 (5 MHz)	QPSK	1 852.5	4.510	4.504
		1 880.0	4.508	4.505
		1 907.5	4.501	4.502
2 (5 MHz)	16QAM	1 852.5	4.506	4.503
		1 880.0	4.507	4.504
		1 907.5	4.505	4.507
2 (10 MHz)	QPSK	1 855.0	9.006	8.991
		1 880.0	8.996	8.970
		1 905.0	9.007	8.973
2 (10 MHz)	16QAM	1 855.0	8.983	8.970
		1 880.0	8.990	8.985
		1 905.0	8.993	8.971
2 (15 MHz)	QPSK	1 857.5	13.480	13.486
		1 880.0	13.497	13.486
		1 902.5	13.503	13.483
2 (15 MHz)	16QAM	1 857.5	13.502	13.488
		1 880.0	13.504	13.483
		1 902.5	13.510	13.478
2 (20 MHz)	QPSK	1 860.0	18.051	18.043
		1 880.0	18.029	18.076
		1 900.0	18.110	18.066
2 (20 MHz)	16QAM	1 860.0	18.052	18.089
		1 880.0	17.999	18.018
		1 900.0	18.122	18.071

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Band	Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	
			FCC	IC
4 (1.4 MHz)	QPSK	1 710.7	1.098	1.094
		1 732.5	1.100	1.092
		1 754.3	1.098	1.092
4 (1.4 MHz)	16QAM	1 710.7	1.099	1.093
		1 732.5	1.095	1.093
		1 754.3	1.099	1.095
4 (3 MHz)	QPSK	1 711.5	2.746	2.735
		1 732.5	2.749	2.741
		1 753.5	2.742	2.739
4 (3 MHz)	16QAM	1 711.5	2.745	2.739
		1 732.5	2.749	2.742
		1 753.5	2.742	2.739
4 (5 MHz)	QPSK	1 712.5	4.504	4.514
		1 732.5	4.508	4.507
		1 752.5	4.508	4.510
4 (5 MHz)	16QAM	1 712.5	4.513	4.503
		1 732.5	4.507	4.507
		1 752.5	4.510	4.509
4 (10 MHz)	QPSK	1 715.0	9.005	8.989
		1 732.5	8.978	8.951
		1 750.0	8.990	8.980
4 (10 MHz)	16QAM	1 715.0	9.004	9.003
		1 732.5	8.985	8.970
		1 750.0	8.990	8.982
4 (15 MHz)	QPSK	1 717.5	13.513	13.485
		1 732.5	13.470	13.469
		1 747.5	13.506	13.468
4 (15 MHz)	16QAM	1 717.5	13.481	13.483
		1 732.5	13.473	13.465
		1 747.5	13.504	13.486
4 (20 MHz)	QPSK	1 720.0	18.087	18.045
		1 732.5	18.020	17.935
		1 745.0	18.052	18.029
4 (20 MHz)	16QAM	1 720.0	18.052	18.041
		1 732.5	17.981	17.958
		1 745.0	18.040	18.030

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Band	Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	
			FCC	IC
5 (1.4 MHz)	QPSK	824.7	1.095	1.094
		836.5	1.096	1.093
		848.3	1.099	1.093
5 (1.4 MHz)	16QAM	824.7	1.096	1.093
		836.5	1.093	1.091
		848.3	1.093	1.090
5 (3 MHz)	QPSK	825.5	2.745	2.746
		836.5	2.750	2.741
		847.5	2.746	2.739
5 (3 MHz)	16QAM	825.5	2.741	2.740
		836.5	2.744	2.738
		847.5	2.748	2.741
5 (5 MHz)	QPSK	826.5	4.504	4.500
		836.5	4.510	4.512
		846.5	4.506	4.499
5 (5 MHz)	16QAM	826.5	4.506	4.505
		836.5	4.511	4.505
		846.5	4.511	4.503
5 (10 MHz)	QPSK	829.0	9.009	8.989
		836.5	9.020	8.975
		844.0	8.997	8.977
5 (10 MHz)	16QAM	829.0	8.991	8.995
		836.5	8.994	8.986
		844.0	9.012	8.990

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Band	Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	
			FCC	IC
12 (1.4 MHz)	QPSK	699.7	1.095	1.093
		707.5	1.094	1.094
		715.3	1.094	1.090
12 (1.4 MHz)	16QAM	699.7	1.093	1.090
		707.5	1.094	1.089
		715.3	1.094	1.094
12 (3 MHz)	QPSK	700.5	2.754	2.740
		707.5	2.743	2.746
		714.5	2.742	2.734
12 (3 MHz)	16QAM	700.5	2.742	2.740
		707.5	2.747	2.742
		714.5	2.743	2.740
12 (5 MHz)	QPSK	701.5	4.520	4.507
		707.5	4.520	4.509
		713.5	4.510	4.502
12 (5 MHz)	16QAM	701.5	4.513	4.510
		707.5	4.512	4.508
		713.5	4.510	4.504
12 (10 MHz)	QPSK	704.0	9.004	8.992
		707.5	9.004	8.994
		711.0	8.992	8.981
12 (10 MHz)	16QAM	704.0	8.988	8.986
		707.5	9.003	9.001
		711.0	9.004	8.982

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Band	Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	
			FCC	IC
13 (5 MHz)	QPSK	779.5	4.525	4.514
		782.0	4.484	4.487
		784.5	4.544	4.528
13 (5 MHz)	16QAM	779.5	4.518	4.518
		782.0	4.489	4.484
		784.5	4.535	4.529
13 (10 MHz)	QPSK	-	-	-
		782.0	9.002	8.978
		-	-	-
13 (10 MHz)	16QAM	-	-	-
		782.0	8.980	9.006
		-	-	-

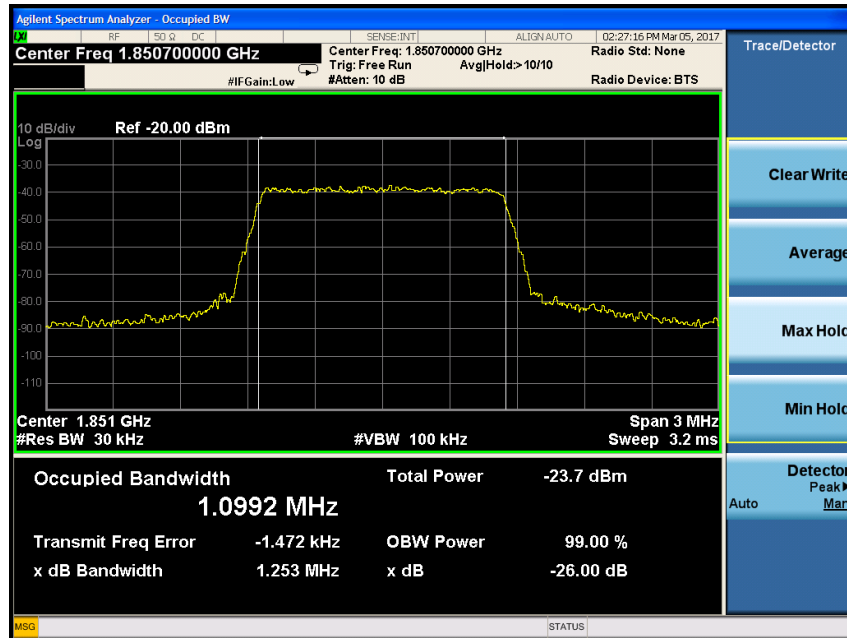
Band	Mode	Frequency (MHz)	Occupied Bandwidth (MHz)	
			FCC	IC
17 (5 MHz)	QPSK	706.5	4.519	4.507
		710.0	4.511	4.506
		713.5	4.500	4.498
17 (5 MHz)	16QAM	706.5	4.506	4.513
		710.0	4.507	4.509
		713.5	4.506	4.507
17 (10 MHz)	QPSK	709.0	9.011	8.988
		710.0	8.992	8.966
		711.0	8.991	8.978
17 (10 MHz)	16QAM	709.0	8.993	9.005
		710.0	9.014	8.993
		711.0	9.021	8.987

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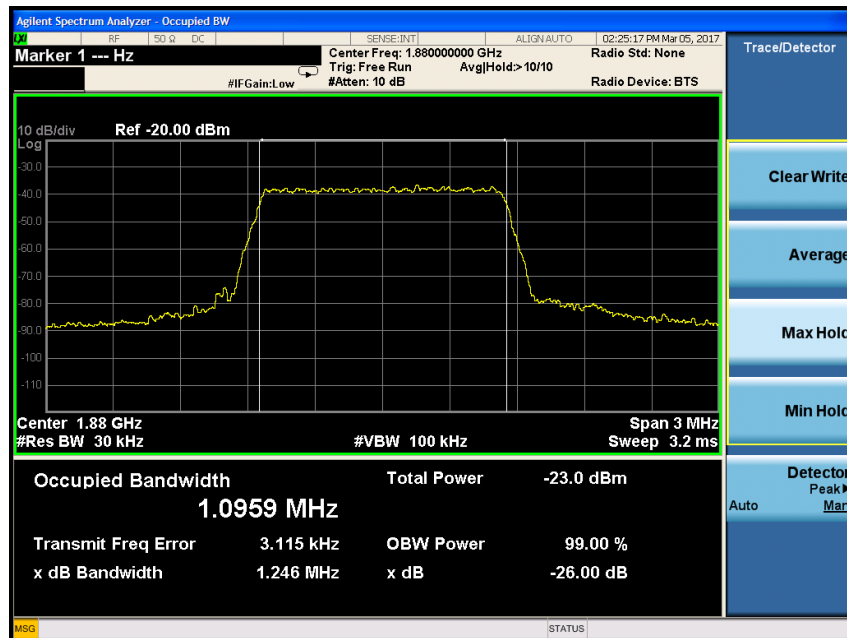
FCC

LTE band 2 (1.4 MHz - QPSK)

Low Channel

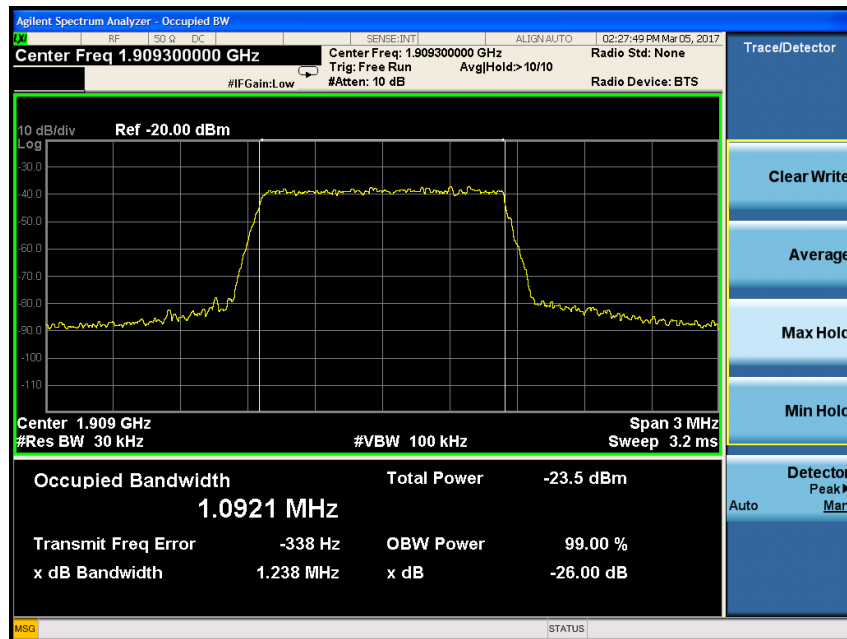


Middle Channel



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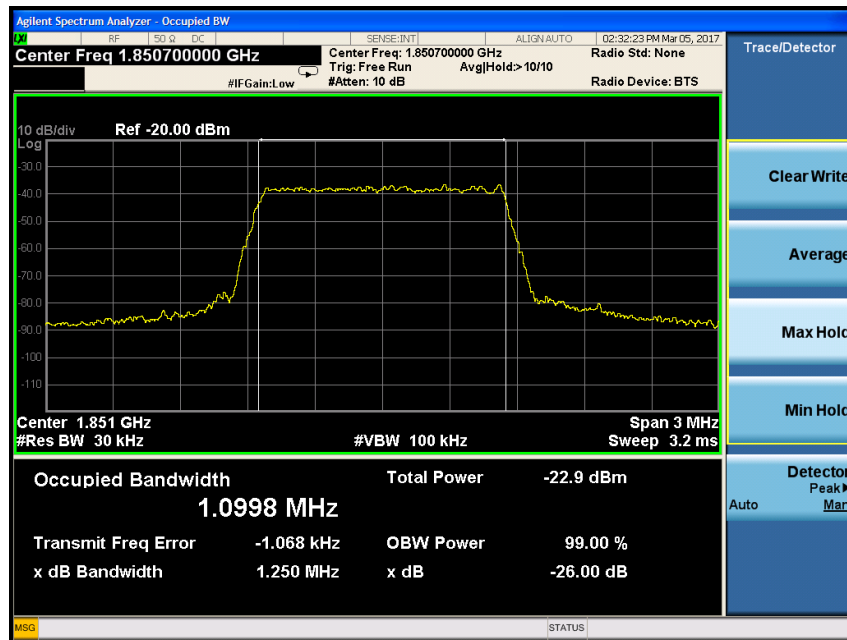
High Channel



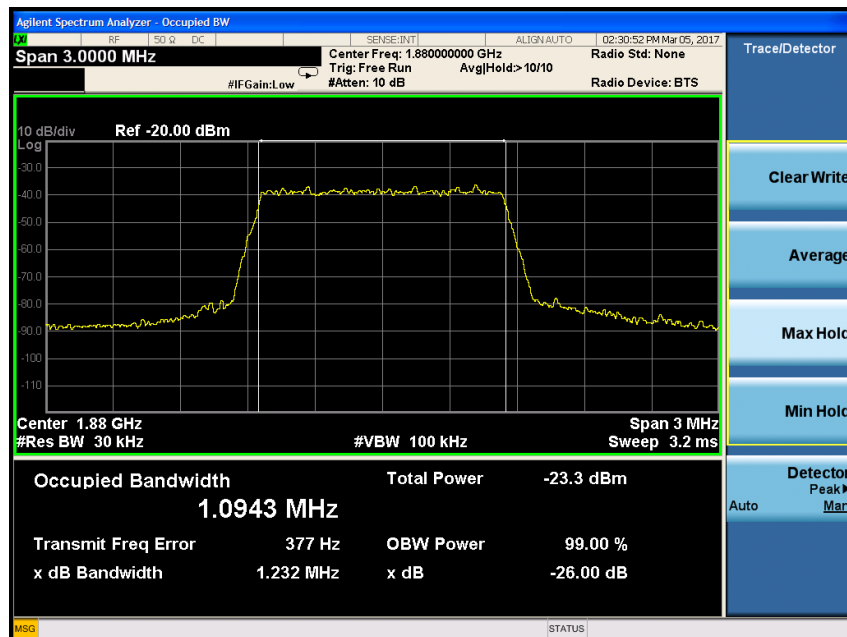
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LTE band 2 (1.4 MHz - 16QAM)

Low Channel

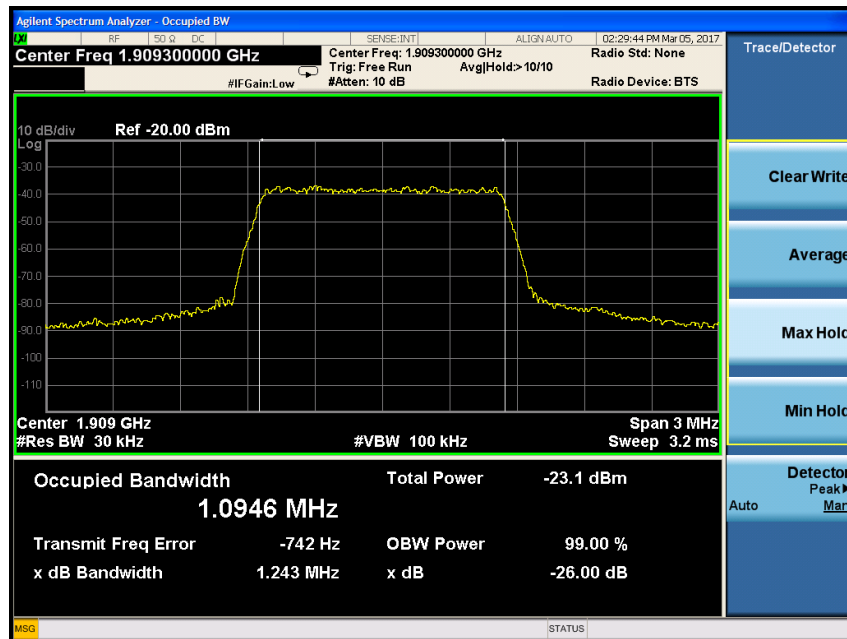


Middle Channel



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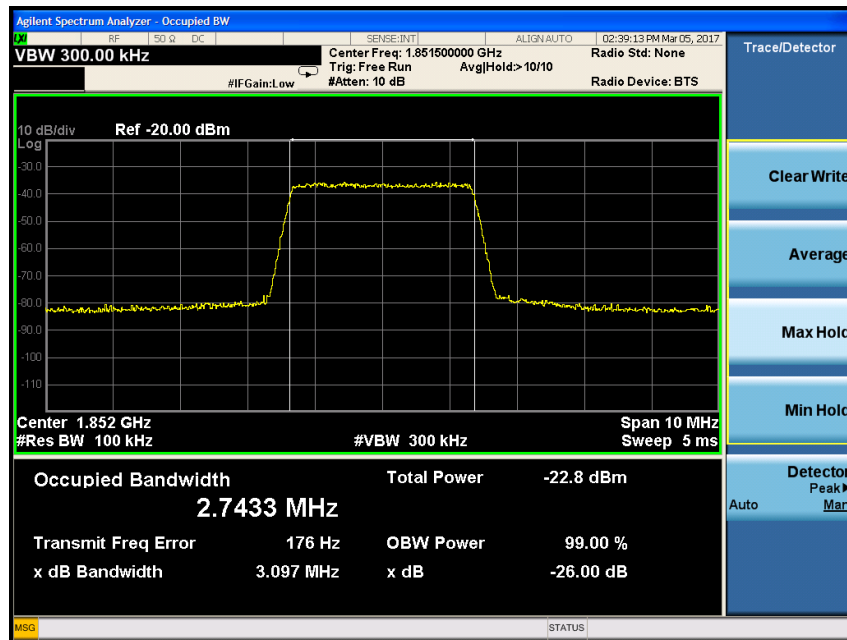
High Channel



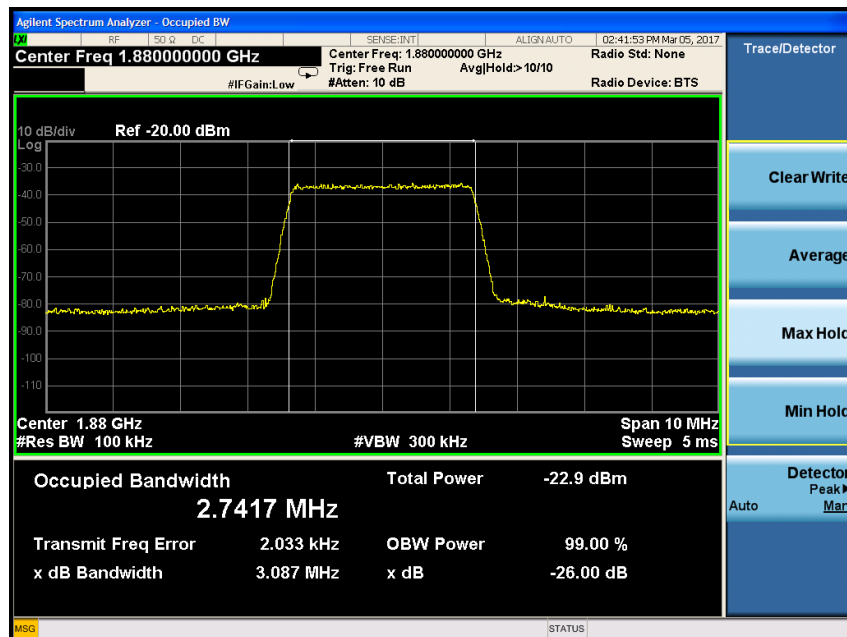
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LTE band 2 (3 MHz - QPSK)

Low Channel

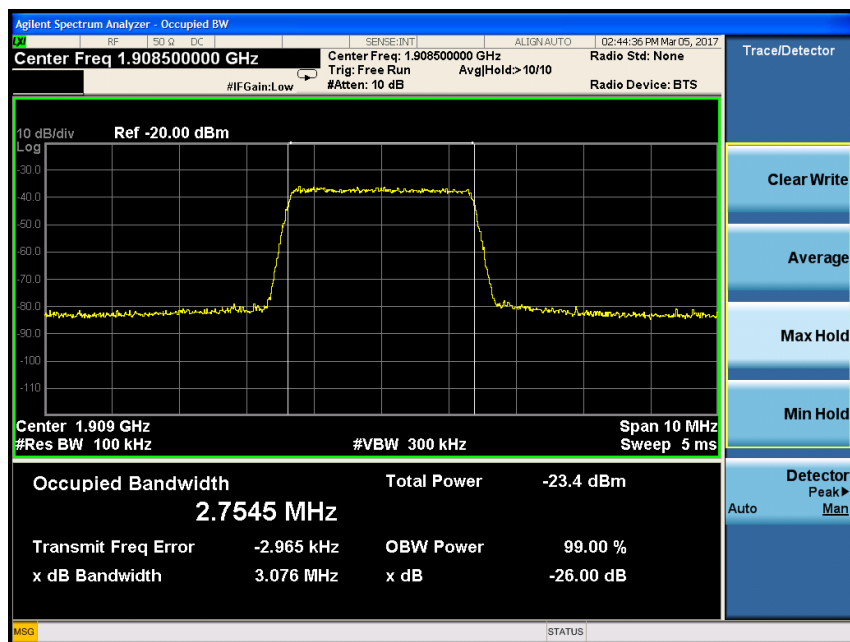


Middle Channel



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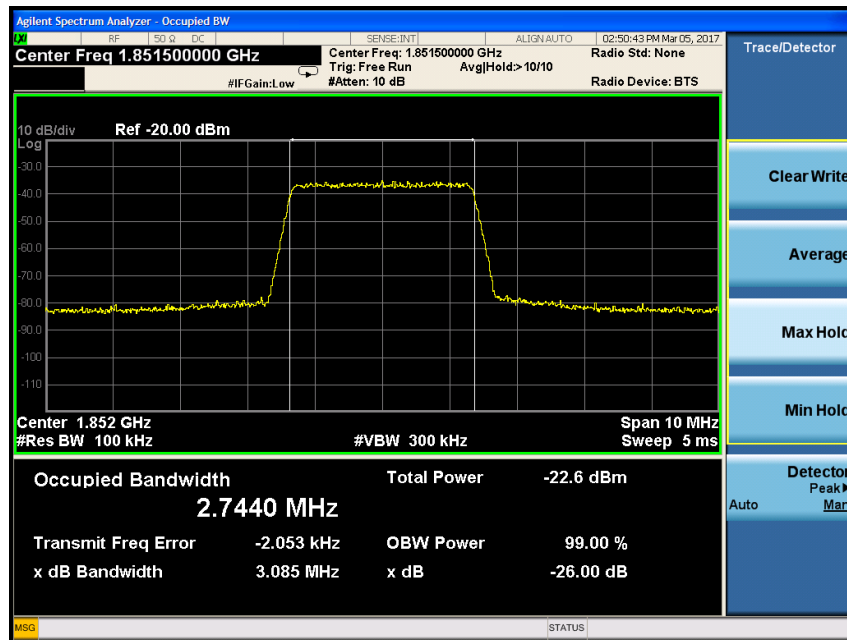
High Channel



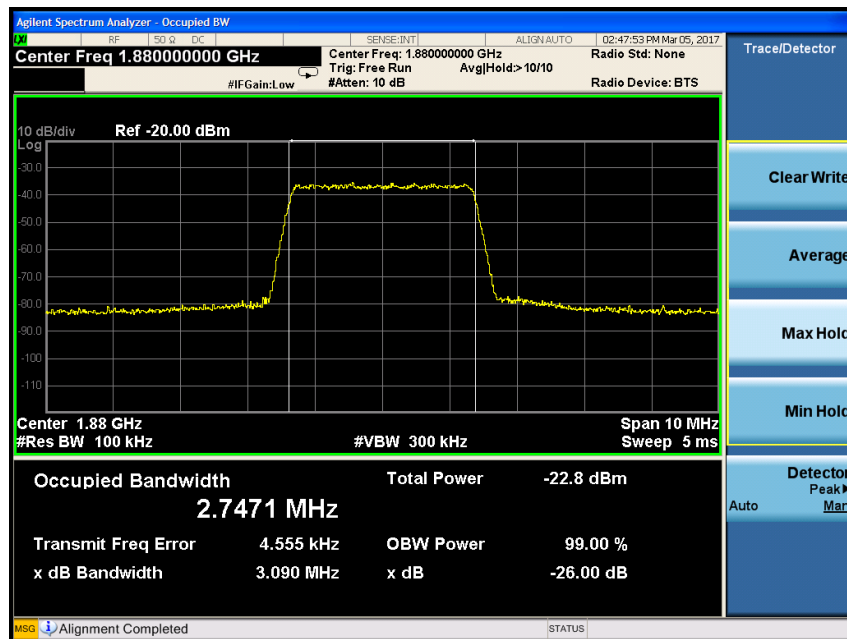
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LTE band 2 (3 MHz - 16QAM)

Low Channel

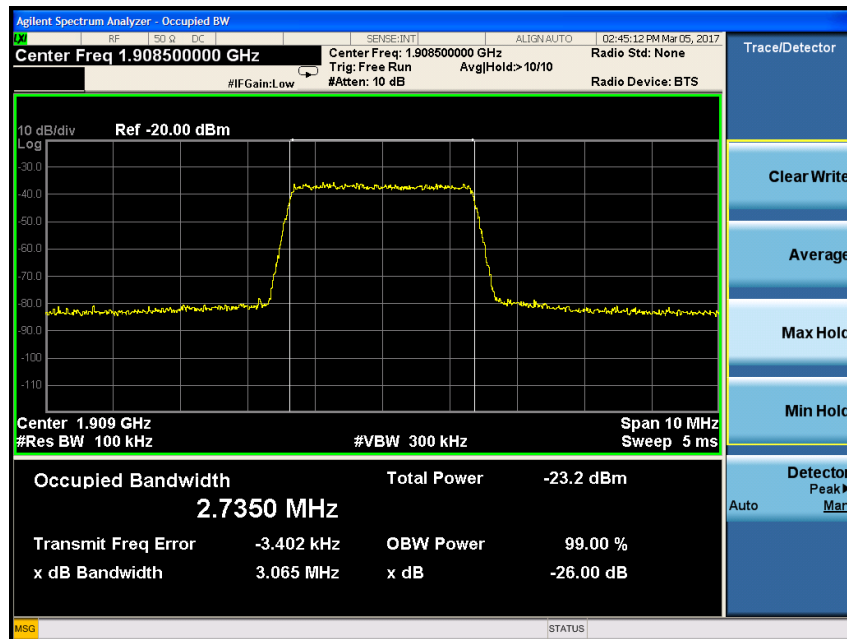


Middle Channel



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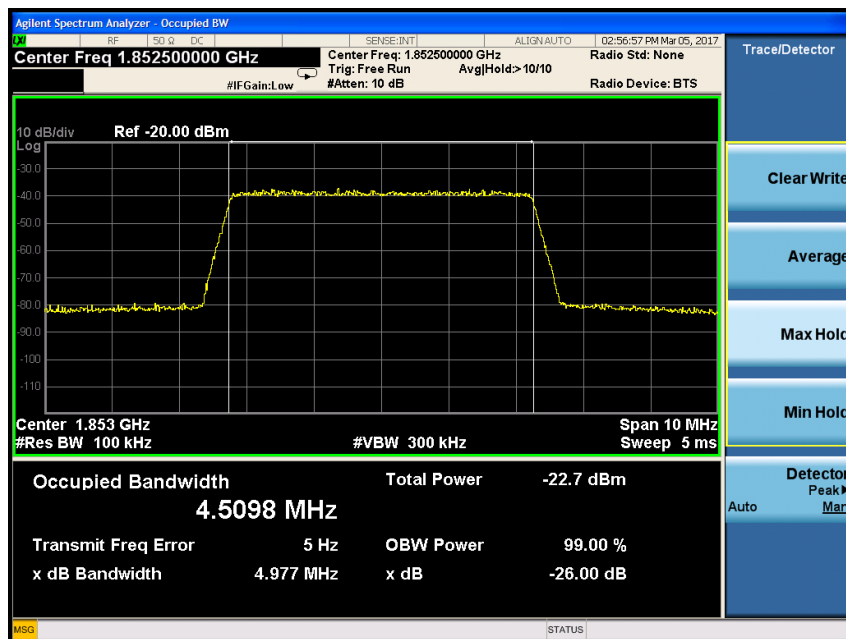
High Channel



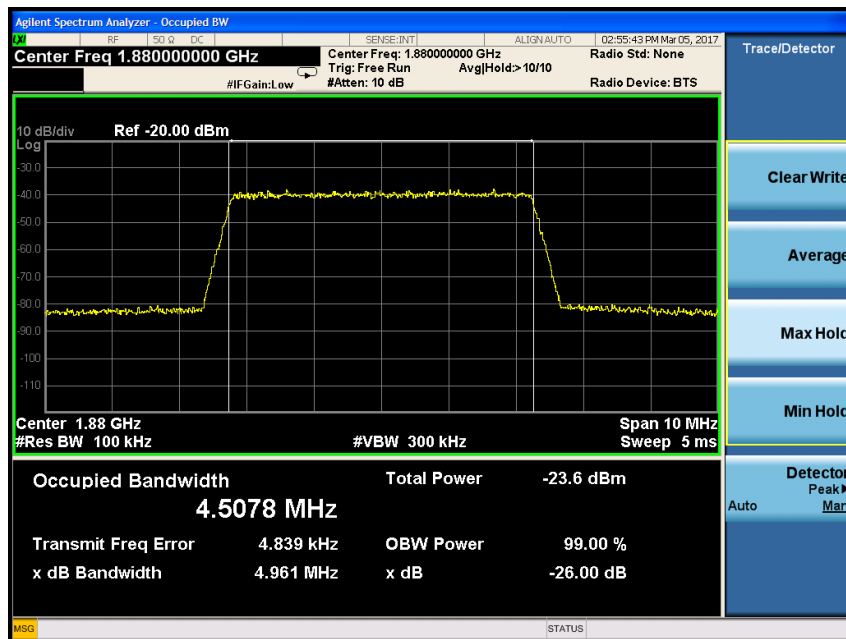
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LTE band 2 (5 MHz - QPSK)

Low Channel

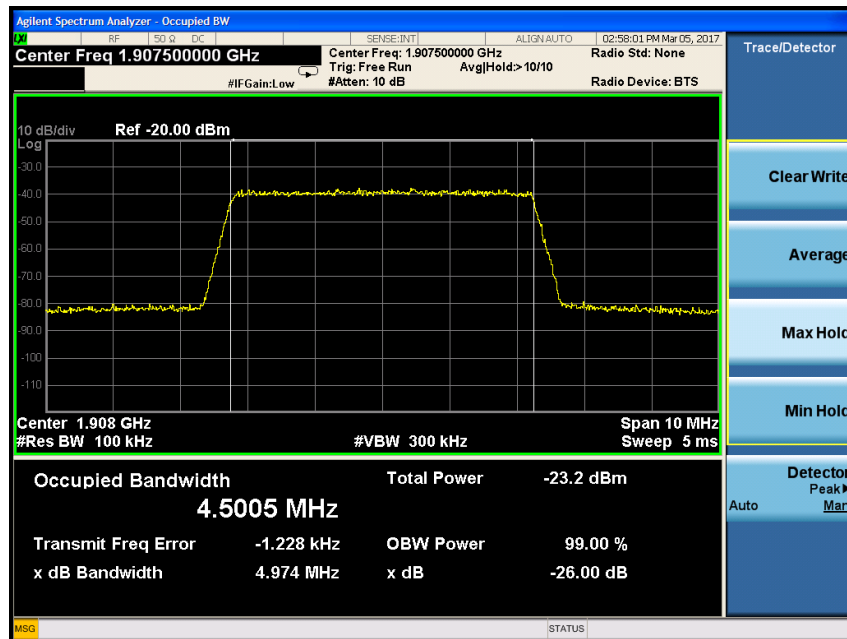


Middle Channel



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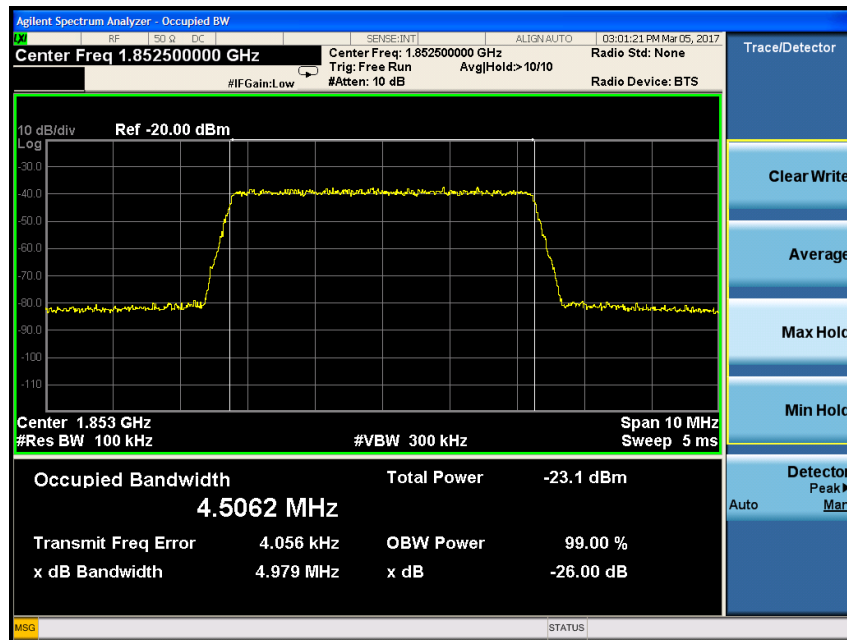
High Channel



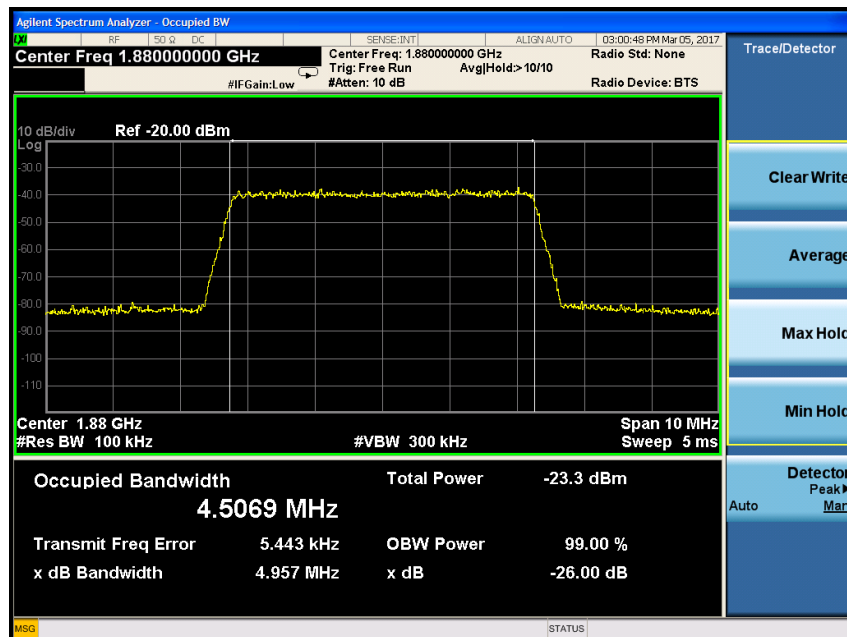
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LTE band 2 (5 MHz - 16QAM)

Low Channel

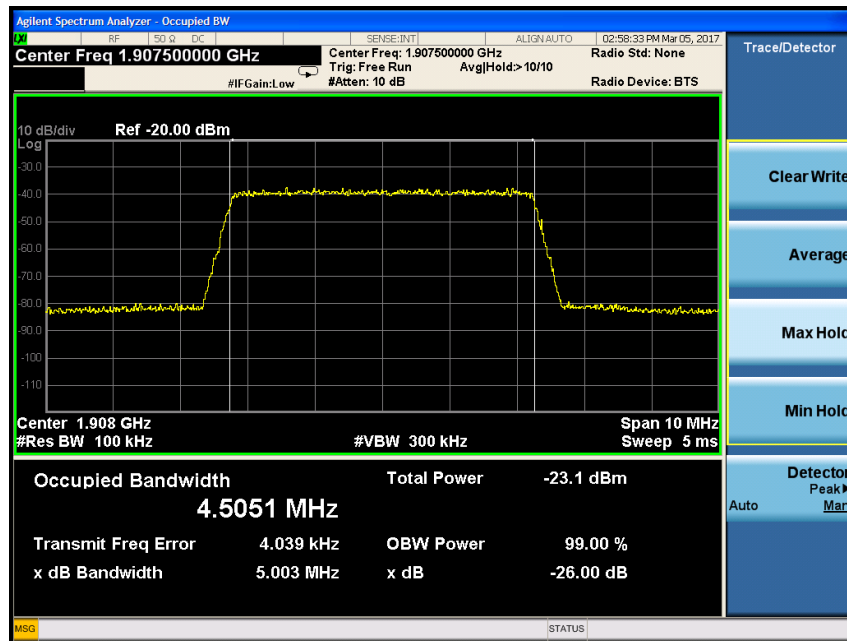


Middle Channel



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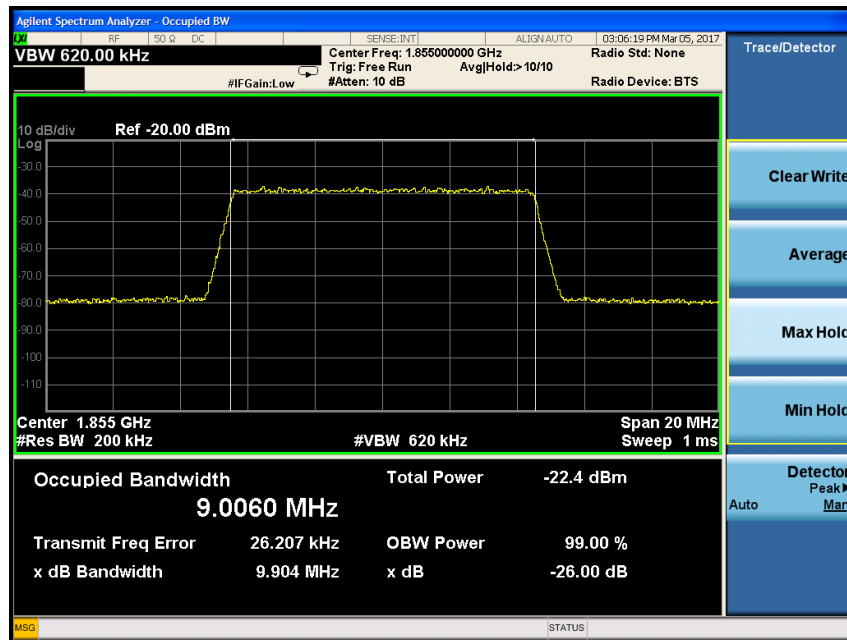
High Channel



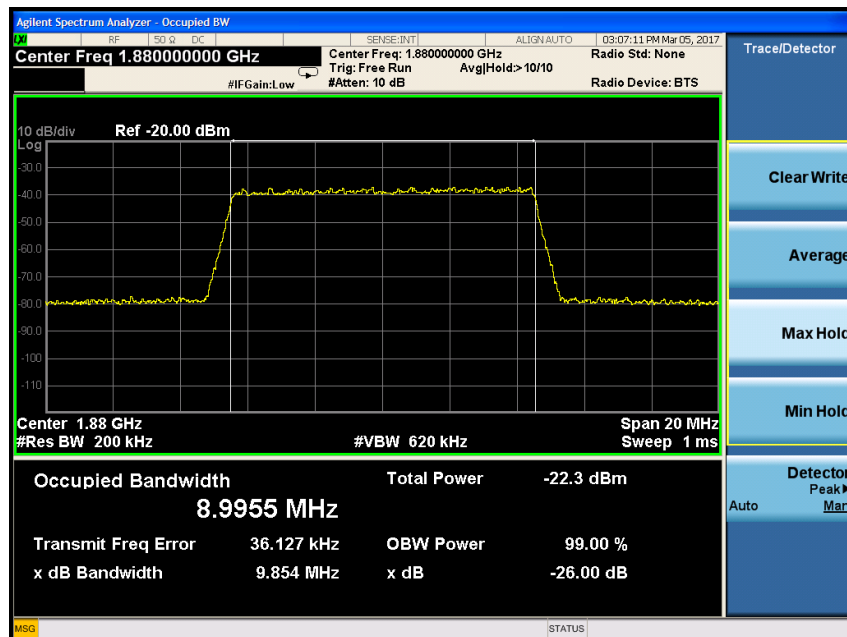
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LTE band 2 (10 MHz - QPSK)

Low Channel

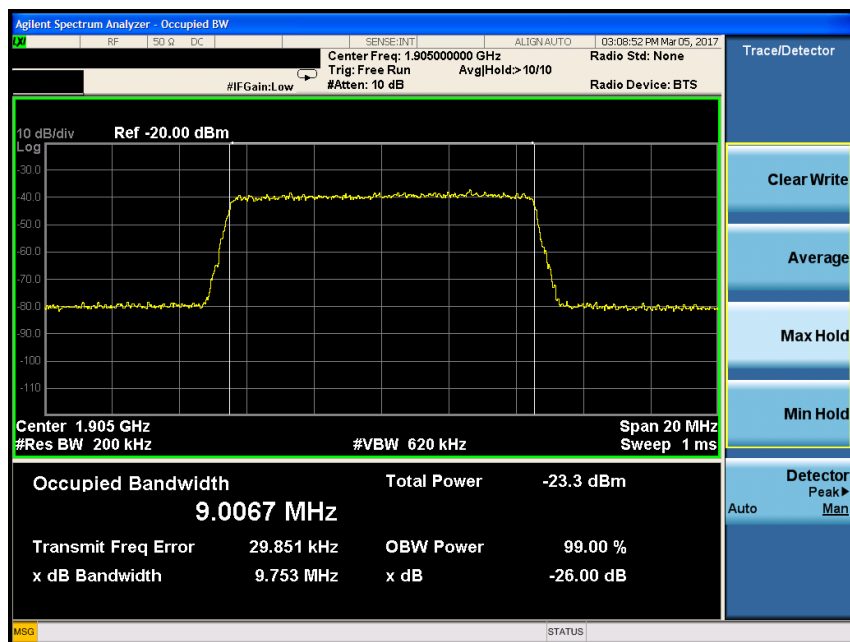


Middle Channel



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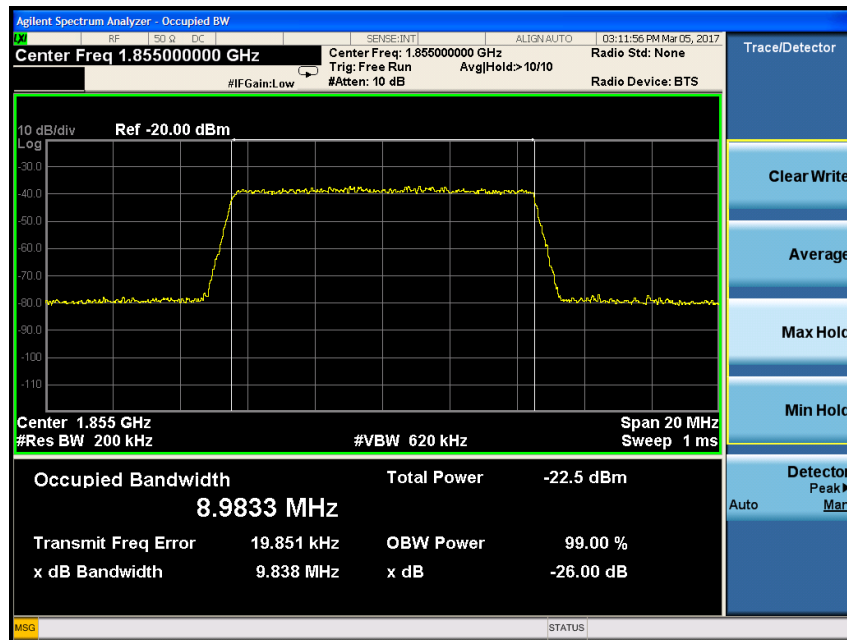
High Channel



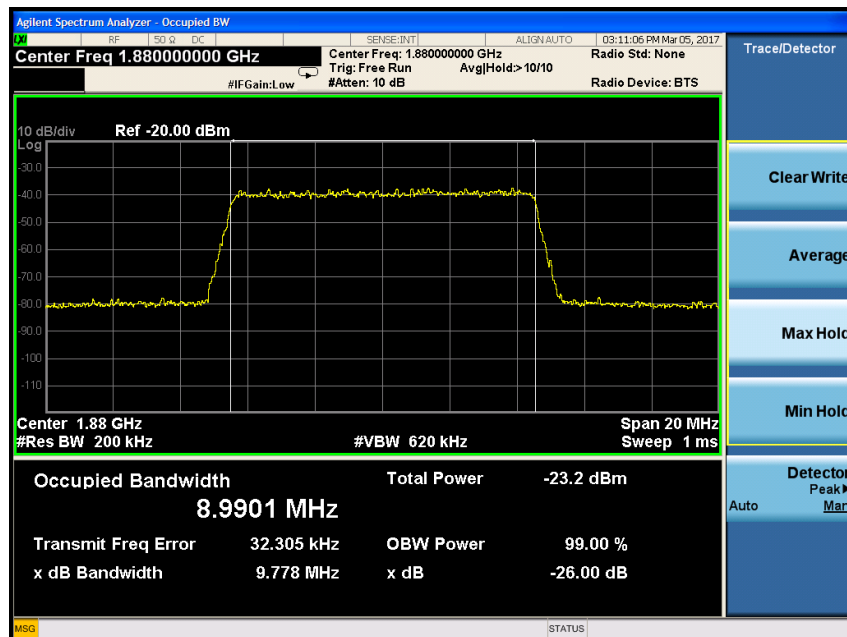
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LTE band 2 (10 MHz - 16QAM)

Low Channel

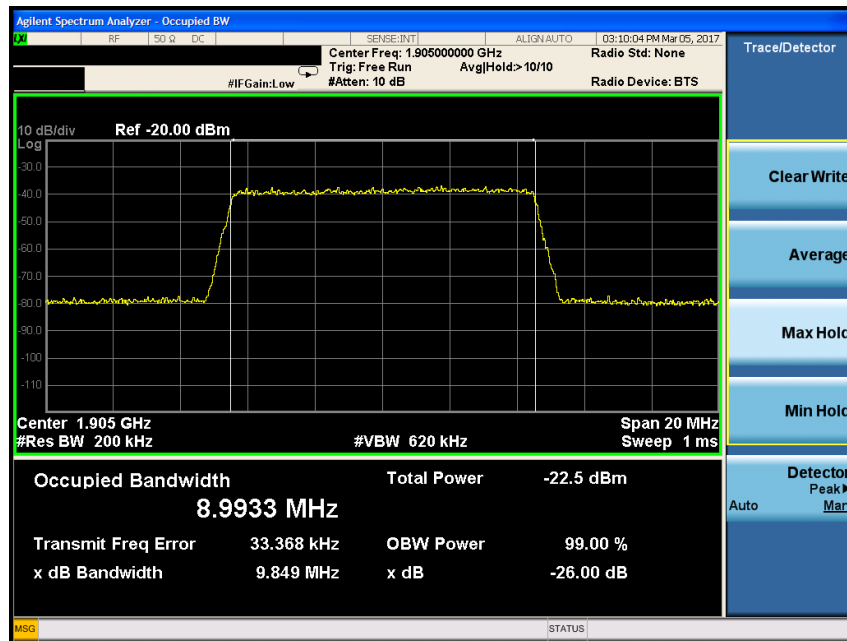


Middle Channel



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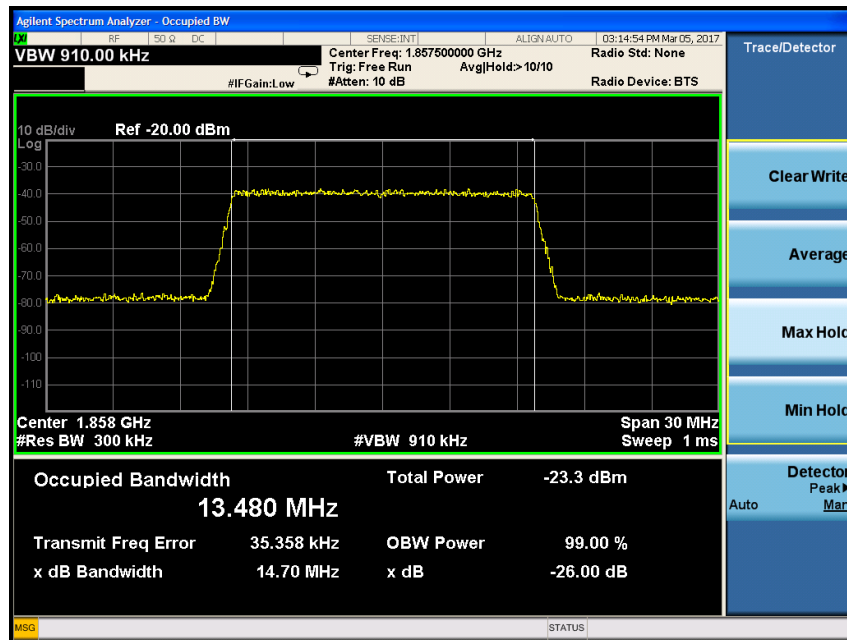
High Channel



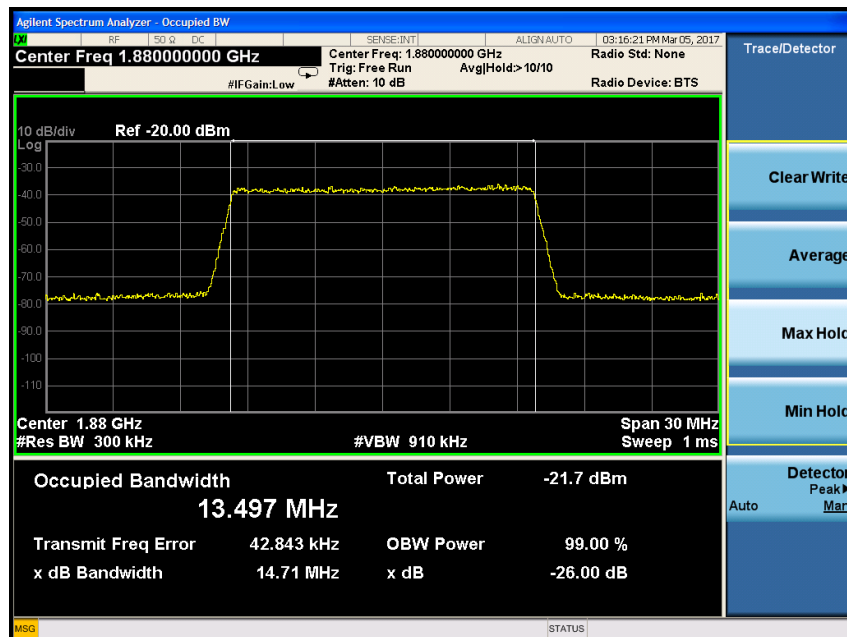
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LTE band 2 (15 MHz - QPSK)

Low Channel

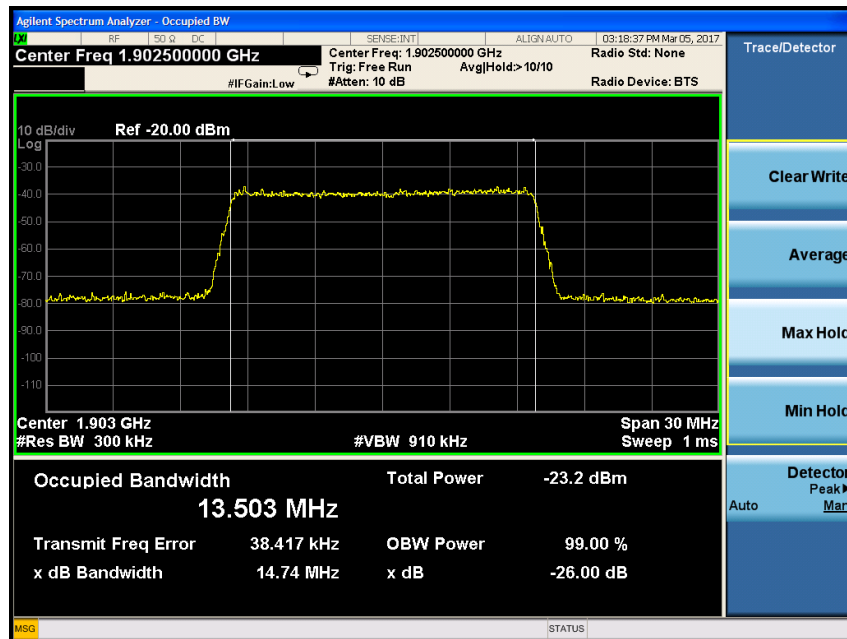


Middle Channel



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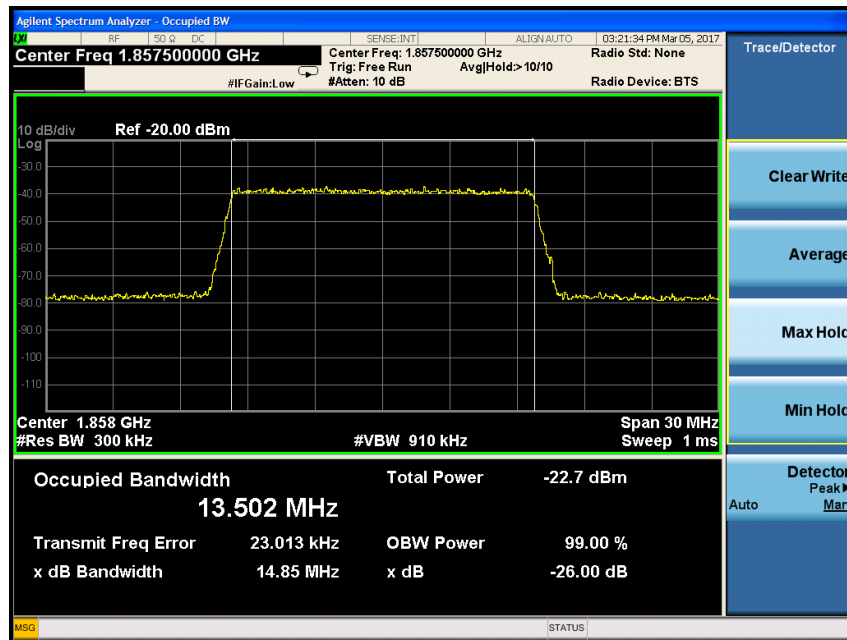
High Channel



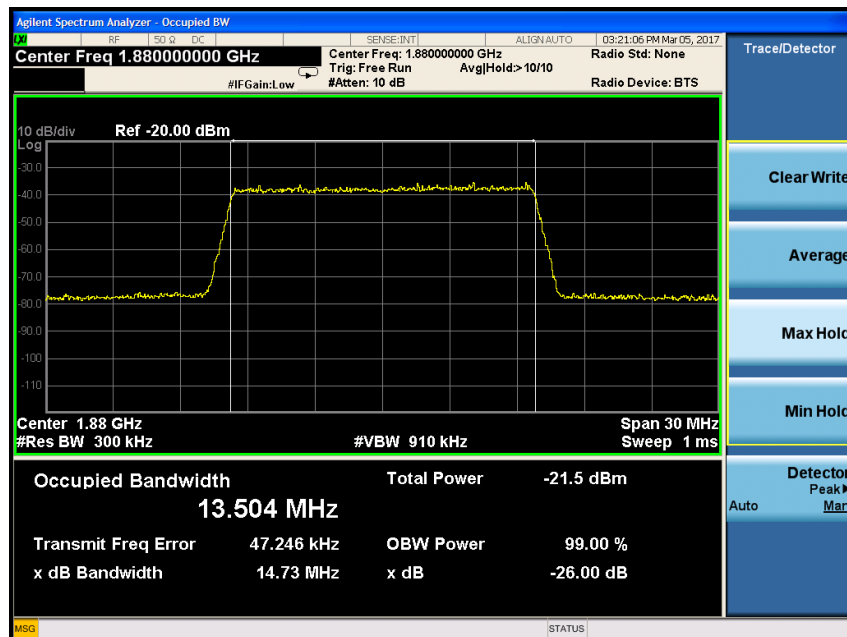
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LTE band 2 (15 MHz - 16QAM)

Low Channel

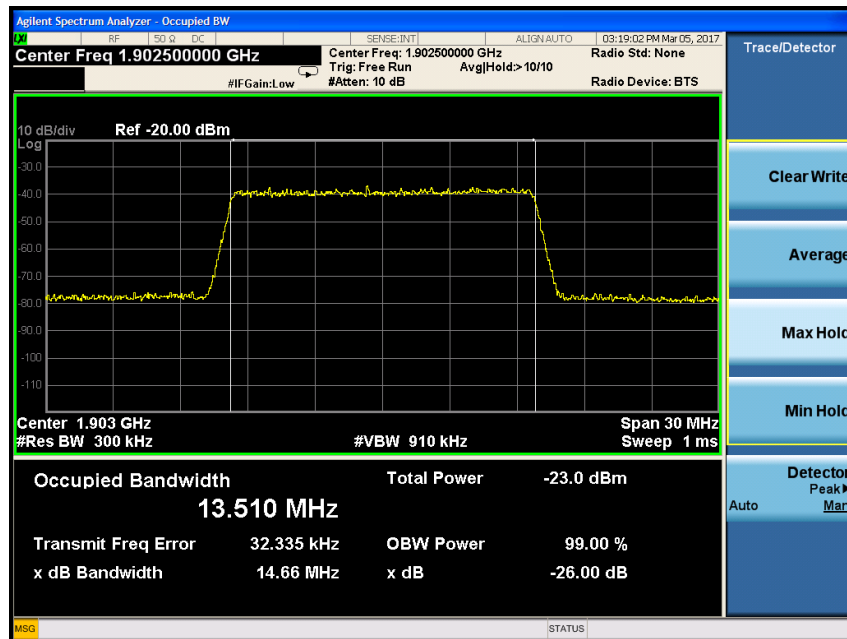


Middle Channel



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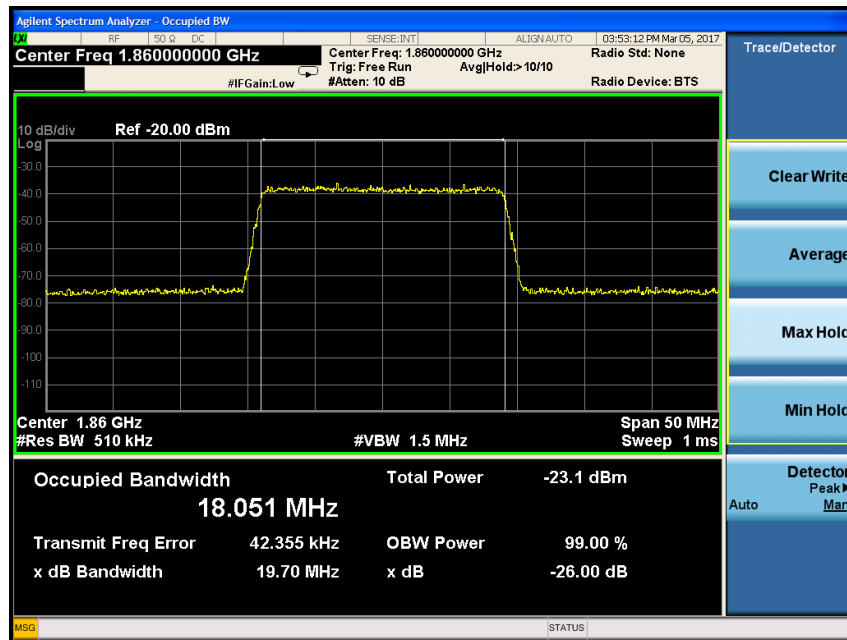
High Channel



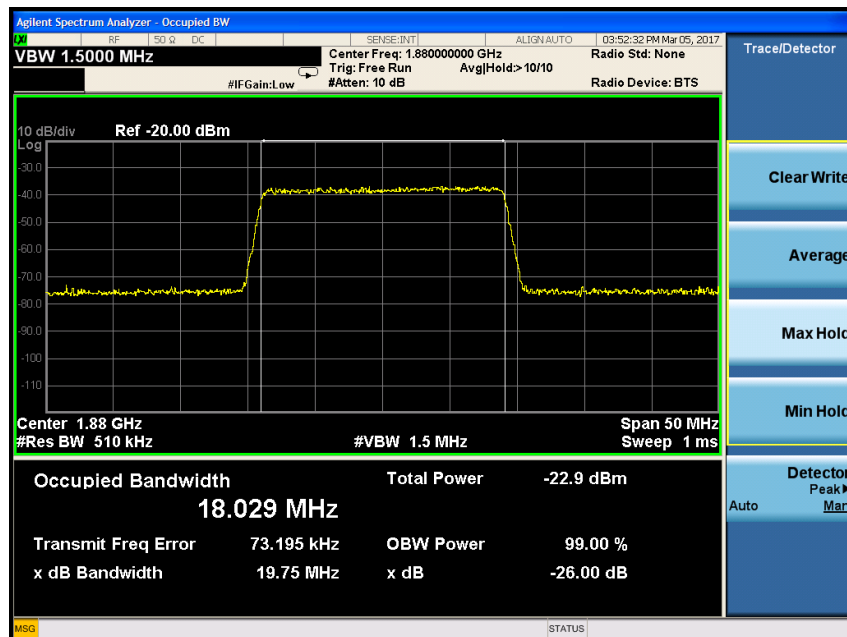
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LTE band 2 (20 MHz - QPSK)

Low Channel

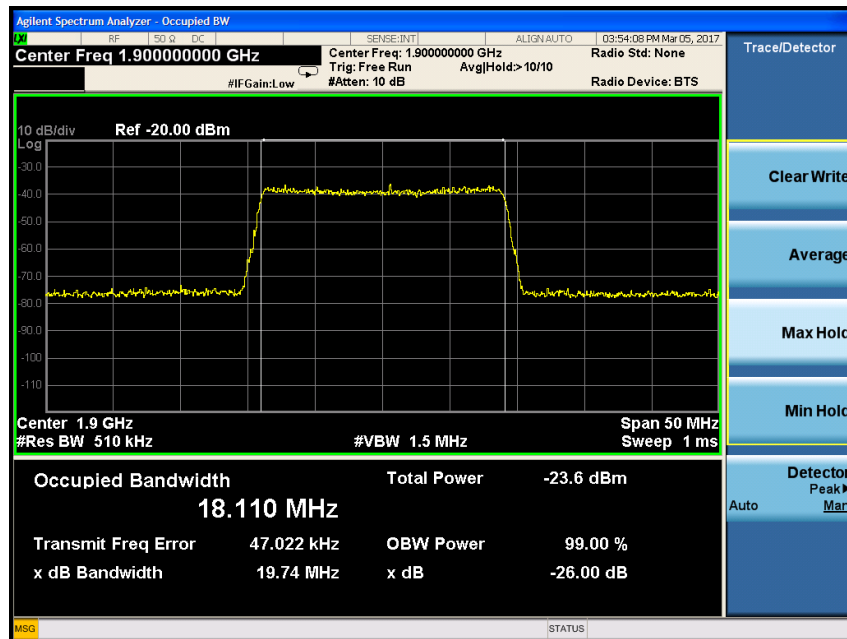


Middle Channel



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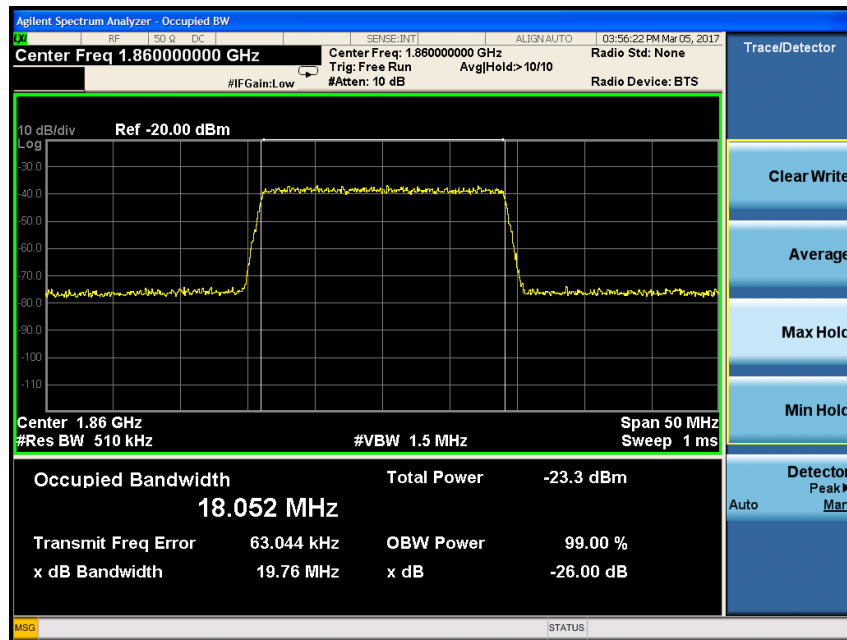
High Channel



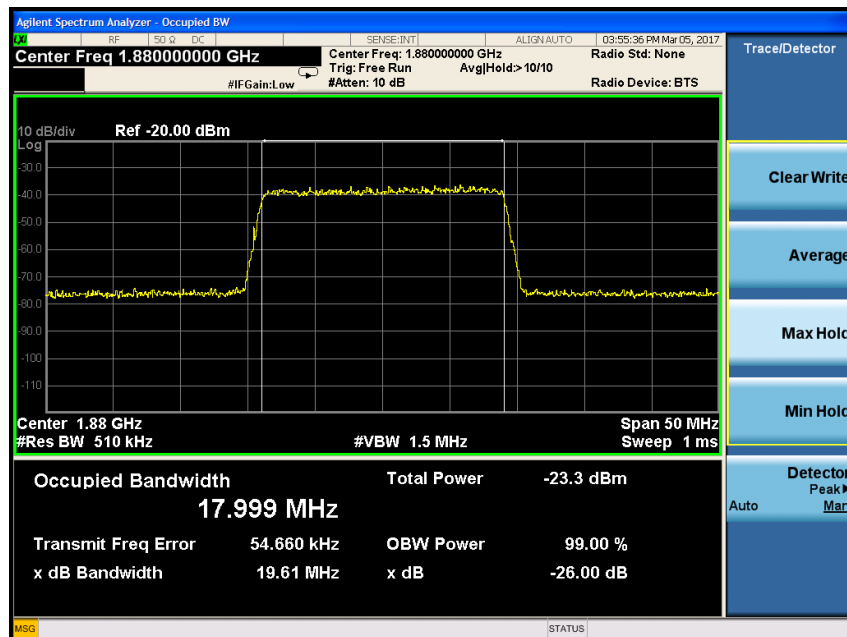
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LTE band 2 (20 MHz - 16QAM)

Low Channel

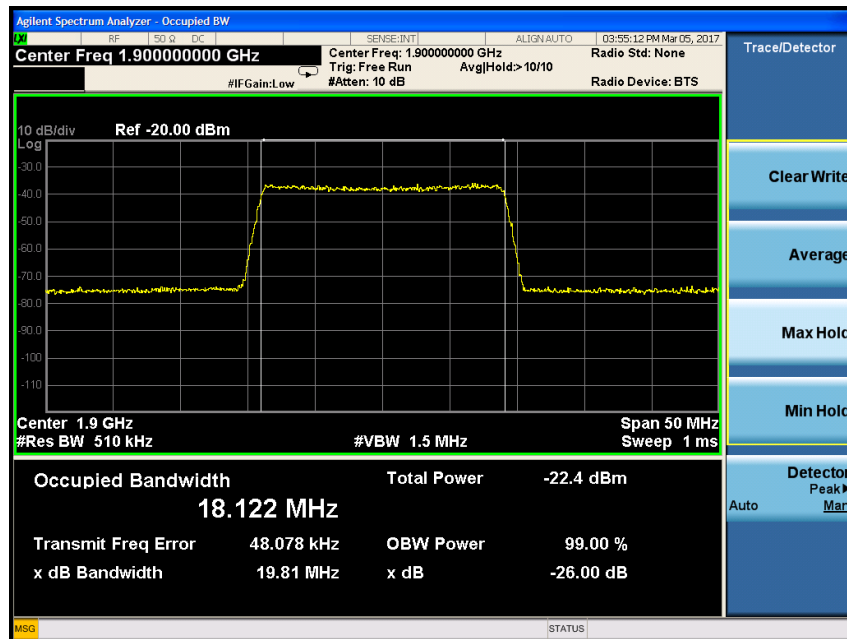


Middle Channel



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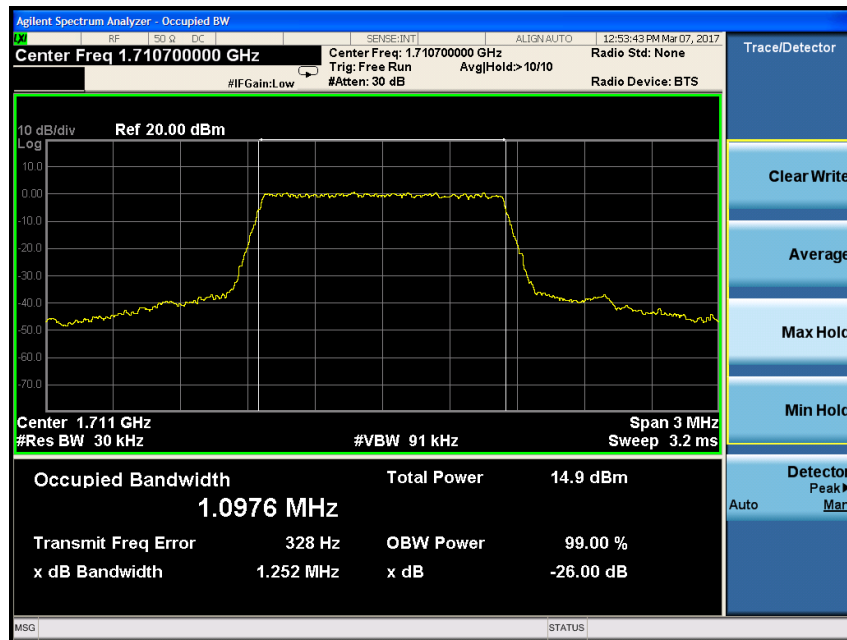
High Channel



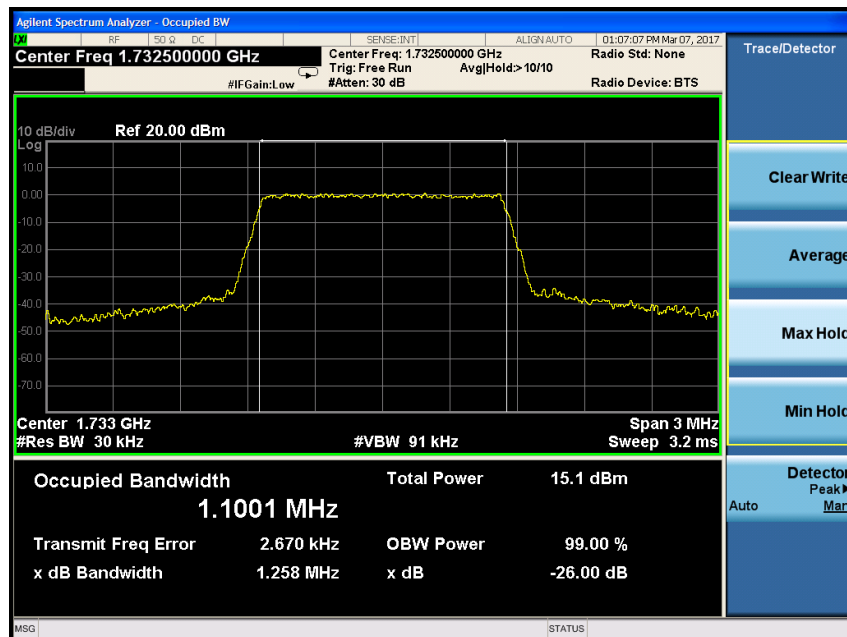
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LTE band 4 (1.4 MHz - QPSK)

Low Channel



Middle Channel



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