

FCC TEST REPORT FCC 47 CFR Part 27 MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES ISED RSS-130, Issue 1 Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 698-756 MHz and 777-787 MHz ISED RSS-139, Issue 3 Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz	
Report Reference No.	GOM-1812-7888-TFC227UL-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    <p style="font-size: small; margin-top: 5px;"> TESTING CERT# 1983.01 Deutsche Akkreditierungsstelle D-PL-12092-01-02 </p>
	FCC Test Firm Designation Number: DE0008 IC Testing Laboratory site: 3470A-2
Applicant's name	Leica Geosystems AG
Address	Heinrich Wild Strasse 9435 Heerbrugg SWITZERLAND
Test specification:	
Standard.....	47 CFR Part 27 RSS-130, Issue 1 : 2013-10, RSS-139, Issue 3 : 2015-07 RSS-Gen, Issue 4, 2014-11
Test scope.....	partial Radio compliance test
Equipment under test (EUT):	
Product description	Field Controller Win EC7
Model No.	CS20 LTE Disto (US, CA)
Additional Model(s)	None
Brand Name(s)	Leica Geosystems
Hardware version	V1.0
Firmware / Software version	V4.97
	FCC-ID: RFD-CSNGG IC: 3177A-CSNGG
Test result	Passed

Possible test case verdicts:

- neither assessed nor tested : N/N
- required by standard but not appl. to test object : N/A
- required by standard but not tested : N/T
- not required by standard for the test object : N/R
- test object does meet the requirement : P (Pass)
- test object does not meet the requirement : F (Fail)

Testing:

Test Lab Temperature : 20 – 23 °C

Test Lab Humidity : 32 – 38 %

Date of receipt of test item : 2019-01-15

Date (s) of performance of tests : 2019-01-15 - 2019-02-26

Compiled by : Christian Weber

Tested by (+ signature) : Burkhard Pudell *B. Pudell*
 (Responsible for Test)

Approved by (+ signature) : Christian Weber *C. Weber*
 (Head of Lab)

Date of issue : 2019-07-16

Total number of pages : 59

General remarks:

The test results presented in this report relate only to the object tested.
The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Additional comments:

Test case reduction on radiated measurements only is based on the requirements for host integration for full modular approved transmitter modules (KDB 996369 D02) used by the EUT. The EUT uses a module with full modular approval according to FCC and IC rules. For details about the radio module see EUT description in section 1.

ADDITIONAL VARIANTS

Additional Variants (not tested and not evaluated variants)		
Not-tested Variant	Description	
1	Product Type Description	Field Controller Win EC7
	Model name	CS20 LTE (US, CA)
	Brand name	Geosystems
	Hardware Version	V1.00
	Software Version	V4.97
<p>Comment: Those named additional variants above have not been tested. Those additional variants of the series have been declared by the manufacturer. The test report explicitly states that those variants were neither tested nor assessed nor evaluated.</p>		

Version History

Version	Issue Date	Remarks	Revised by
01	2019-07-16	Initial Release	

REPORT INDEX

1	EQUIPMENT (TEST ITEM) DESCRIPTION	6
1.1	Photos – Equipment External	8
1.2	Photos – Equipment internal	10
1.3	Photos – Test setup	13
1.4	Supporting Equipment Used During Testing	14
1.5	Test Modes	14
1.6	Test Equipment Used During Testing	18
1.7	Sample emission level calculation	19
2	RESULT SUMMARY	20
3	TEST CONDITIONS AND RESULTS	21
3.1	Test Conditions and Results – Occupied Bandwidth	21
3.2	Test Conditions and Results – Effective radiated power / Equivalent isotropic radiated power	52
3.3	Test Conditions and Results – Transmitter radiated emissions	55
3.4	Test Conditions and Results – Receiver radiated emissions	58

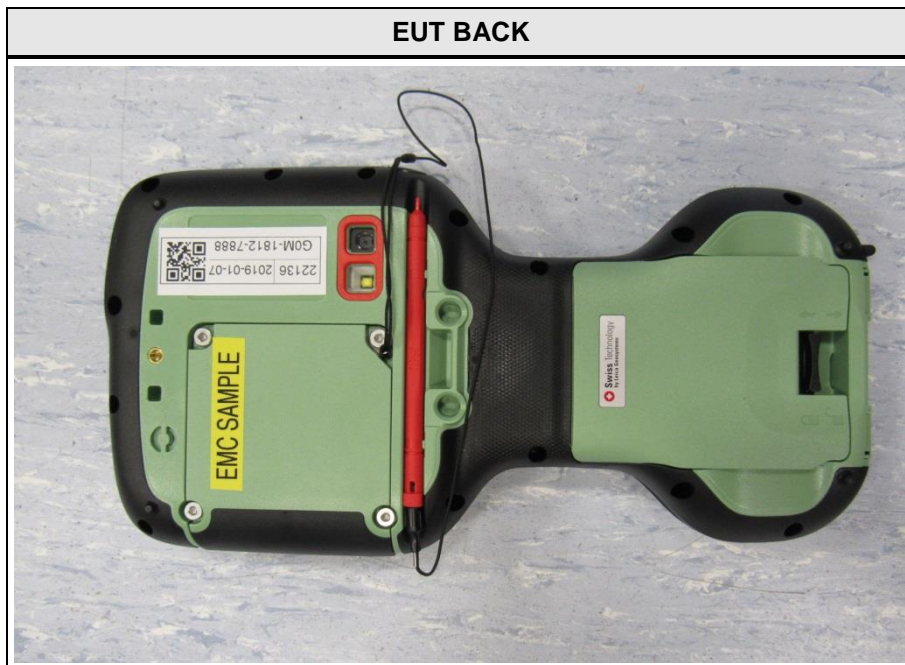
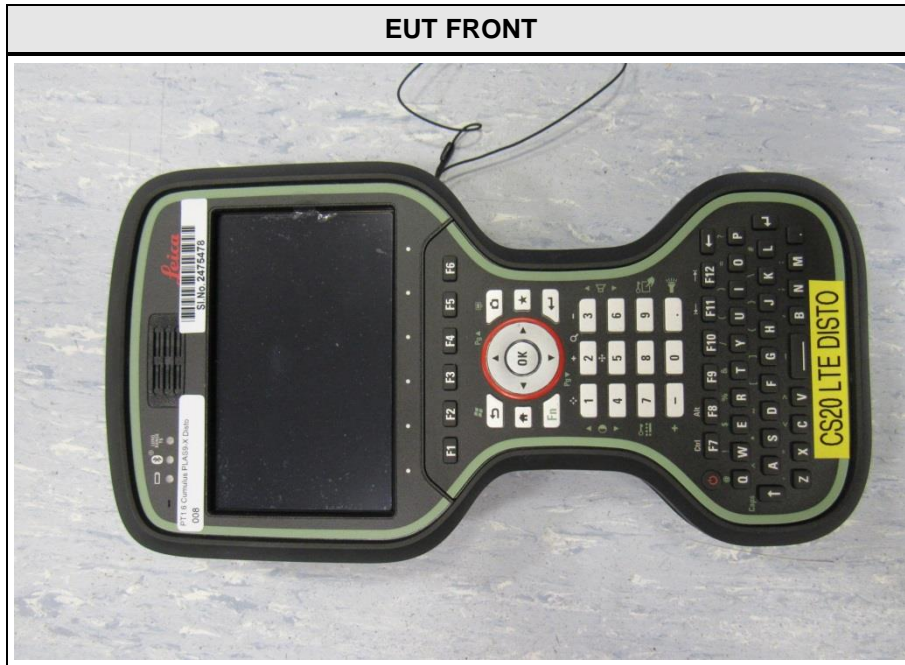
1 Equipment (Test item) Description

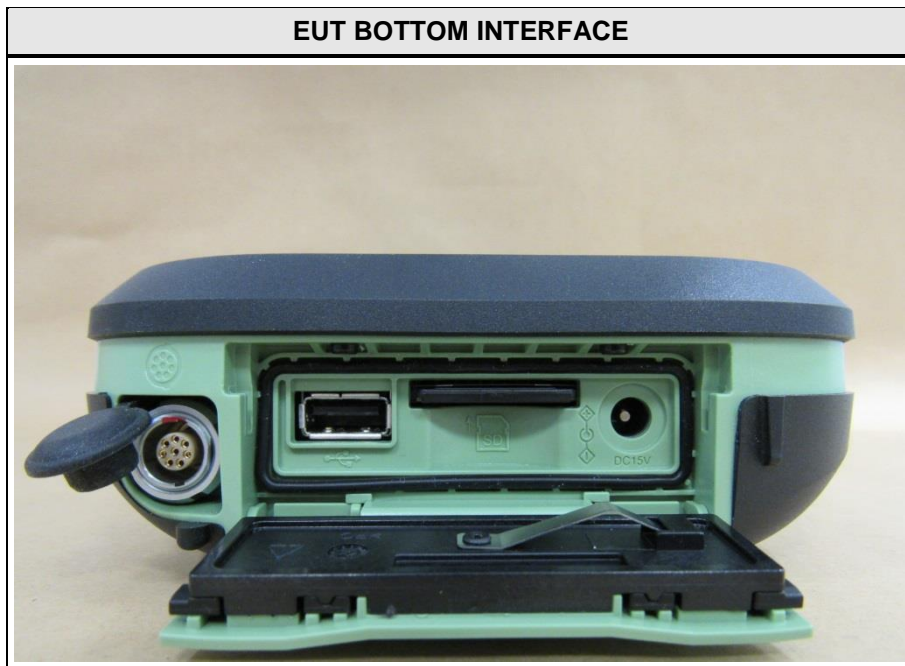
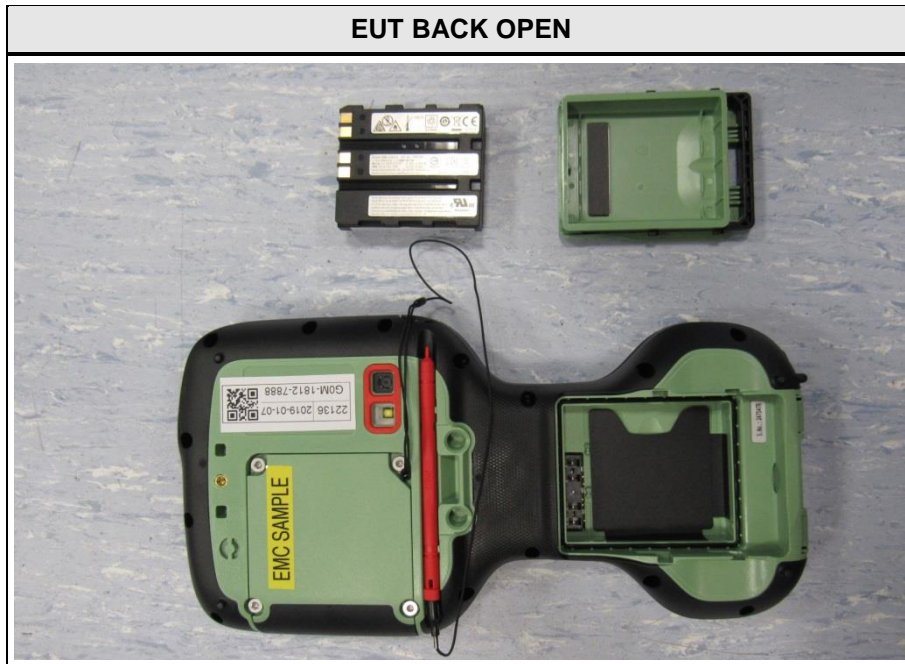
Description	Field Controller Win EC7		
Model	CS20 LTE Disto (US, CA)		
Additional Model(s)	None		
Brand Name(s)	Leica Geosystems		
Serial number	2475478		
Hardware version	V1.0		
Software / Firmware version	V4.97		
PMN	CS20 LTE Disto, CS20 LTE		
HVIN	CS20 LTE Disto, CS20 LTE		
FVIN	-/-		
HMN	-/-		
FCC-ID	RFD-CSNGG		
IC	3177A-CSNGG		
Equipment type	End product		
Equipment classification	Mobile Device (Human Body distance > 20 cm)		
Radio type	Transceiver		
Radio technology	W-CDMA / LTE		
Operating frequency range	FDD IV : TX = 1710 - 1755 MHz, RX = 2110 - 2155 MHz LTE 4 : TX = 1710 - 1755 MHz, RX = 2110 - 2155 MHz LTE 12 : TX = 699 - 716 MHz, RX = 729 - 746 MHz LTE 13 : TX = 777 - 787 MHz, RX = 746 - 756 MHz LTE 17 : TX = 704 - 716 MHz, RX = 734 - 746 MHz		
Assigned frequency band	FCC: 698 - 716 MHz & 728 - 746 MHz FCC: 746 - 758 MHz & 775 - 788 MHz ISED: 698 - 756 MHz & 777 - 787 MHz FCC / ISED: 1710 - 1780 MHz & 2110 - 2180 MHz		
Main test frequencies UMTS FDD IV	F _{LOW}	CH : 1312 UL: 1712.4 MHz	CH : 1537 DL: 2112.4 MHz
	F _{MID}	CH : 1413 UL: 1732.6 MHz	CH : 1638 DL: 2132.6 MHz
	F _{HIGH}	CH : 1513 UL: 1752.6 MHz	CH : 1738 DL: 2152.6 MHz
Main test frequencies LTE FDD 4	F _{LOW}	CH : 20000 UL: 1715.0 MHz	CH : 2000 DL: 2115.0 MHz
	F _{MID}	CH : 20175 UL: 1732.5 MHz	CH : 2175 DL: 2132.5 MHz
	F _{HIGH}	CH : 20350 UL: 1750.0 MHz	CH : 2350 DL: 2150.0 MHz
Main test frequencies LTE FDD 12	F _{LOW}	CH : 23060 UL: 704.0 MHz	CH : 5060 DL: 734.0 MHz
	F _{MID}	CH : 23095 UL: 707.5 MHz	CH : 5095 DL: 737.5 MHz
	F _{HIGH}	CH : 23130 UL: 711.0 MHz	CH : 5130 DL: 741.0 MHz
Main test frequencies LTE FDD 13	F _{LOW}	CH : 23230 UL: 782.0 MHz	CH : 5230 DL: 751.0 MHz
	F _{MID}	CH : 23230 UL: 782.0 MHz	CH : 5230 DL: 751.0 MHz
	F _{HIGH}	CH : 23230 UL: 782.0 MHz	CH : 5230 DL: 751.0 MHz

Test Report No.: G0M-1812-7888-TFC227UL-V01

Main test frequencies LTE FDD 17	F _{LOW}	CH : 23780 UL: 709.0 MHz	CH : 5780 DL: 739.0 MHz
	F _{MID}	CH : 23790 UL: 710.0 MHz	CH : 5790 DL: 740.0 MHz
	F _{HIGH}	CH : 23800 UL: 711.0 MHz	CH : 5800 DL: 741.0 MHz
Supported transmission modes	W-CDMA	RMC+HSPA	
	LTE	RMC	
Modulations	WCDMA	QPSK, 16-QAM	
	LTE	QPSK, 16-QAM	
Number of antennas	2		
Radio module	Type	2G/3G/4G module	
	Model	PLAS9-X	
	Manufacturer	Gemalto	
	HW Version	4.2	
	SW Version	01.001	
	FCC-ID	QIPPLAS9-X	
	IC	7830A-PLAS9X	
Antenna A (TX + RX)	Type	integrated	
	Model	W3796	
	Manufacturer	Pulse Electronics	
	Gain	680- 980 MHz = <2 dBi 1700-2700 MHz = <5 dBi	
Antenna B (RX)	Type	integrated	
	Model	W3796	
	Manufacturer	Pulse Electronics	
	Gain	680- 980 MHz = <1 dBi 1700-2700 MHz = <3 dBi	
Manufacturer	Leica Geosystems AG Heinrich Wild Strasse 9435 Heerbrugg SWITZERLAND		
Power supply	V _{NOM}	11.1 VDC (Battery)	
	V _{MIN}	7.5 VDC (Battery)	
	V _{MIN}	12.6 VDC (Battery)	
AC/DC-Adaptor	Model	GEV276	
	Vendor	Leica Geosystems	
	Input	100 - 240 VAC	
	Output	15 VDC	
Comment: LTE FDD 17 overlaped by LTE FDD 12			

1.1 Photos – Equipment External





1.2 Photos – Equipment internal

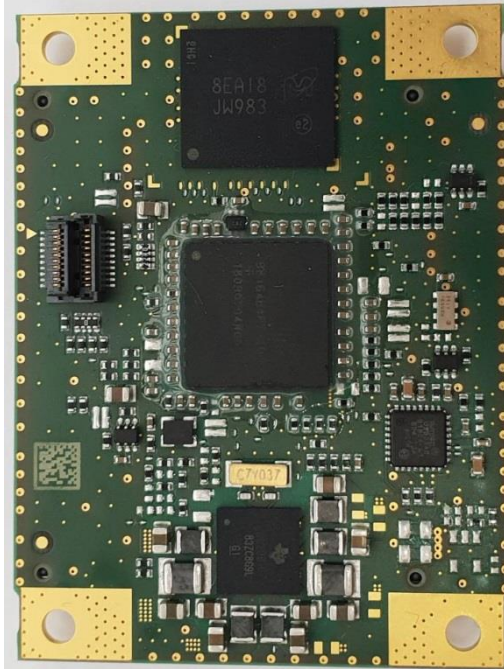
EUT - MAIN PCB TOP



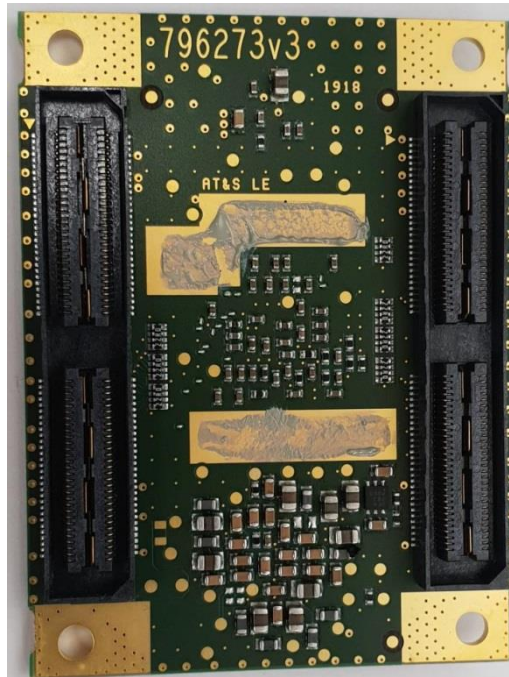
EUT - MAIN PCB BOTTOM

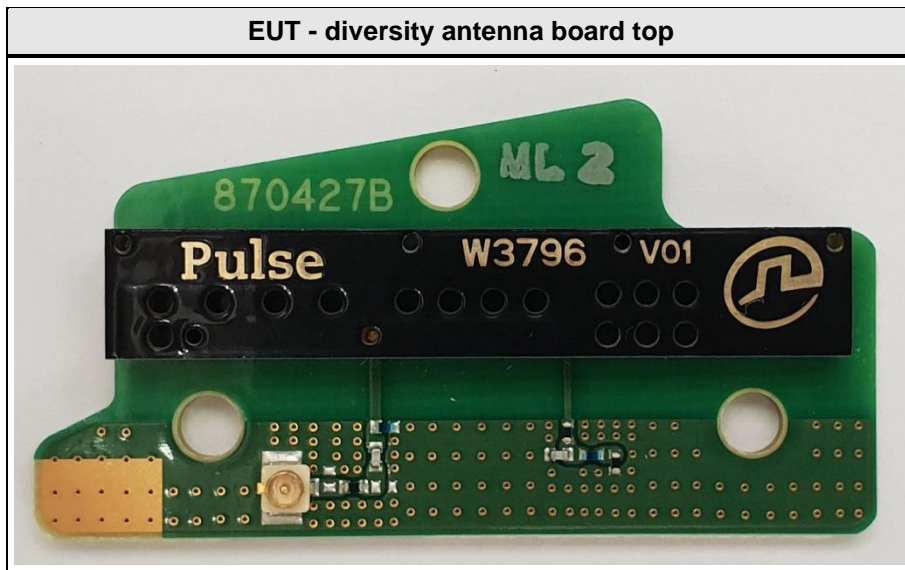


EUT - core module board top

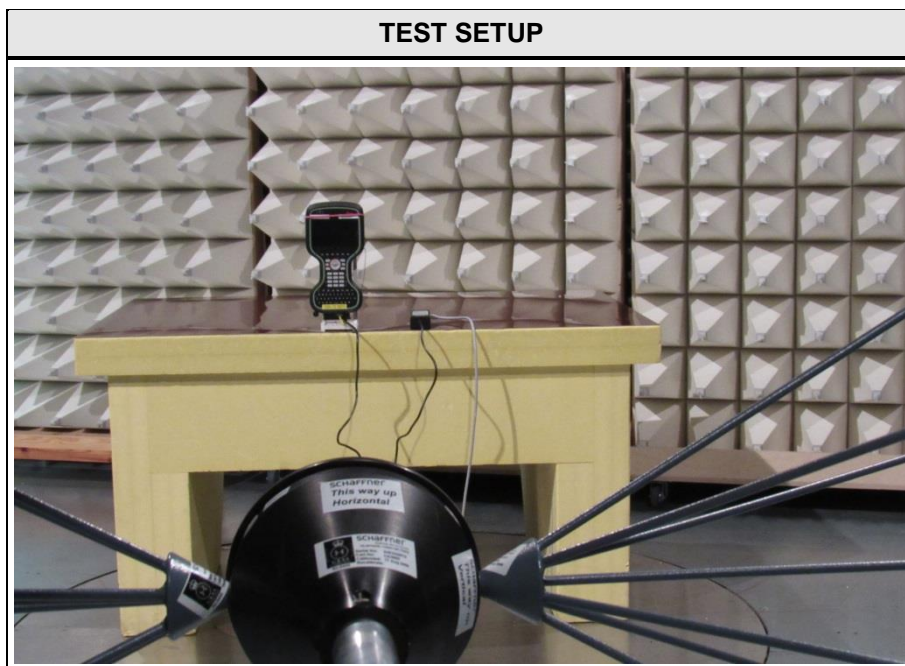
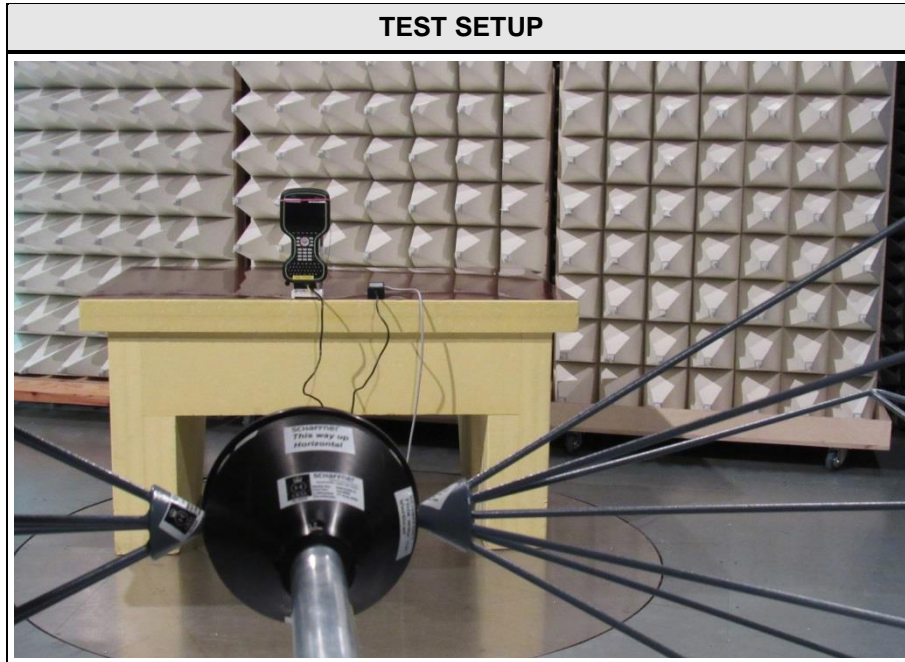


EUT - core module board bottom





1.3 Photos – Test setup



1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
SIM	Network	R&S	CMW500	UMTS / LTE -Tester
<p>*Note: Use the following abbreviations:</p> <p>AE : Auxiliary/Associated Equipment, or</p> <p>SIM : Simulator (Not Subjected to Test)</p> <p>CABL : Connecting cables</p>				

1.5 Test Modes

Mode #	Description	
W-CDMA - TX	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit Connection = RMC12.2kbps + HSPA Modulation = QPSK Power level = Maximum
LTE 4 - QPSK - PWR	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit (PWR=max) Connection = UL BW15MHz RB1 Modulation = QPSK Power level = Maximum
LTE 4 - QAM - PWR	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit (PWR=max) Connection = UL BW15MHz RB1 Modulation = 16-QAM Power level = Maximum
LTE 4 - QPSK20	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit BW=max Connection = UL BW20MHz RB100 Modulation = QPSK Power level = Maximum

LTE 4 - QAM20	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit BW=max Connection = UL BW20MHz RB100 Modulation = 16-QAM Power level = Maximum
LTE 4 - QPSK15	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit Connection = UL BW15MHz RB75 Modulation = QPSK Power level = Maximum
LTE 4 - QAM15	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit Connection = UL BW15MHz RB75 Modulation = QPSK Power level = Maximum
LTE12 - QPSK - PWR	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit (PWR=max) Connection = UL BW5MHz RB1 Modulation = QPSK Power level = Maximum
LTE 12 - QAM - PWR	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit (PWR=max) Connection = UL BW5MHz RB1 Modulation = 16-QAM Power level = Maximum
LTE 12 - QPSK10	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit BW=max Connection = UL BW10MHz RB50 Modulation = QPSK Power level = Maximum
LTE 12 - QAM10	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit BW=max Connection = UL BW10MHz RB50 Modulation = 16-QAM Power level = Maximum

Test Report No.: G0M-1812-7888-TFC227UL-V01

LTE 12 - QPSK5	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit Connection = UL BW5MHz RB25 Modulation = QPSK Power level = Maximum
LTE 12 - QAM5	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit Connection = UL BW5MHz RB25 Modulation = 16-QAM Power level = Maximum
LTE13 - QPSK - PWR	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit (PWR=max) Connection = UL BW10MHz RB1 Modulation = QPSK Power level = Maximum
LTE13 - QAM - PWR	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit (PWR=max) Connection = UL BW10MHz RB1 Modulation = 16-QAM Power level = Maximum
LTE 13 - QPSK10	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit BW=max Connection = UL BW10MHz RB50 Modulation = QPSK Power level = Maximum
LTE 13 - QAM10	General conditions:	EUT powered by battery connected with AC/DC adapter. Active call to communication tester.
	Radio conditions:	Mode = transmit BW=max Connection = UL BW10MHz RB50 Modulation = 16-QAM Power level = Maximum

W-CDMA - RX	General conditions:	EUT powered by battery connected with AC/DC adapter.
	Radio conditions:	Mode = receive Channel= mid Connection = Cell-FACH mode Modulation = QPSK
LTE - RX	General conditions:	EUT powered by battery connected with AC/DC adapter.
	Radio conditions:	Mode = receive Channel= mid Connection = RMC Modulation = QPSK Configuration = UL BW10MHz RB0
Comments: LTE operational modes were taken from modular approval test reports. The transmission modes with the highest emission bandwidth and output power where determined acc. to KDB 634817 D01		

1.6 Test Equipment Used During Testing

Measurement Software			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2015.2.4

Occupied Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSIQ 26	EF00242	2018-07	2019-07

Radiated power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Fully-anechoic chamber	Frankonia	AC 3	EF00199	-	-
Spectrum Analyzer	R&S	FSIQ 26	EF00242	2018-07	2019-07
LPD Antenna	R&S	HL 223	EF00187	2016-05	2019-05
Horn Antenna	R&S	BBHA 9120D	EF01153	2018-09	2019-09

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
MXE EMI Receiver	Keysight	N9038A-526/WXP	EF01070	2018-08	2019-08
Biconical Antenna	R&S	HK 116	EF00186	2018-03	2020-03
LPD Antenna	R&S	HL 223	EF00202	2016-04	2019-04
Horn Antenna	Schwarzbeck	BBHA9120	EF01153	2018-09	2019-09
Horn Antenna	Amplifier Research	ATH18G40	EF01152	2018-10	2019-10

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dB μ V. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dB μ V/m). The FCC limits are given in units of μ V/m. The following formula is used to convert the units of μ V/m to dB μ V/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 \cdot \log(\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

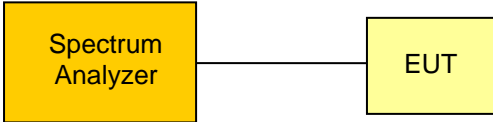
$$\begin{array}{rclcl} \text{Reading} & + & \text{AF} & = & \text{Net Reading} & : & \text{Net reading} - \text{FCC limit} & = & \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} & + & 26 \text{ dB} & = & 47.5 \text{ dB}\mu\text{V/m} & : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} & = & -9.5 \text{ dB} \end{array}$$

2 Result Summary

FCC 47 CFR Part 27, ISED RSS-130, ISED RSS-139				
Product Specific Standard Section	Requirement – Test	Reference Method	Result	Remarks
FCC § 2.1049 ISED RSS-130 3.1 ISED RSS-139 3.1 ISED RSS-Gen 6.6	Occupied Bandwidth	RSS-Gen 6.6 KDB 971168 ANSI C63.26-2015 5.4		Informational only
FCC § 2.1055 FCC § 27.54 ISED RSS-130 4.3 ISED RSS-139 6.4	Frequency stability	FCC § 27.54 ISED RSS-130 4.3 ISED RSS-139 6.4 KDB 971168 ANSI C63.26-2015 5.6	N/T	
FCC § 27.50 (c)(10)	Effective radiated power	ANSI/TIA-603-D KDB 971168	PASS	
FCC § 27.50 (d)(4) ISED RSS-130 4.4 ISED RSS-139 6.5	Equivalent isotropic radiated power	ANSI/TIA-603-D KDB 971168 ANSI C63.26-2015 5.2	PASS	
FCC § 27.50 (d)(5) ISED RSS-130 4.4 ISED RSS-139 6.5	Peak to average ratio	KDB 971168	N/T	
FCC § 27.53(g) FCC § 27.53(h) ISED RSS-130 4.6 ISED RSS-139 6.6	Band-edge compliance	KDB 971168	N/T	
FCC § 27.53(g) FCC § 27.53(h) ISED RSS-130 4.6 ISED RSS-139 6.6	Conducted out-of-band emissions	KDB 971168	N/T	
FCC § 27.53(g) FCC § 27.53(h) ISED RSS-130 4.6 ISED RSS-139 6.6	Radiated out-of-band emissions	ANSI/TIA-603-D KDB 971168 ANSI C63.26-2015 5.5	PASS	
RSS-130 3.1 RSS-139 3.1 ISED RSS-Gen 7.1	Receiver radiated spurious emissions	ISED RSS-Gen 7.1 ANSI C63.4	PASS	
Remarks:				

3 Test Conditions and Results

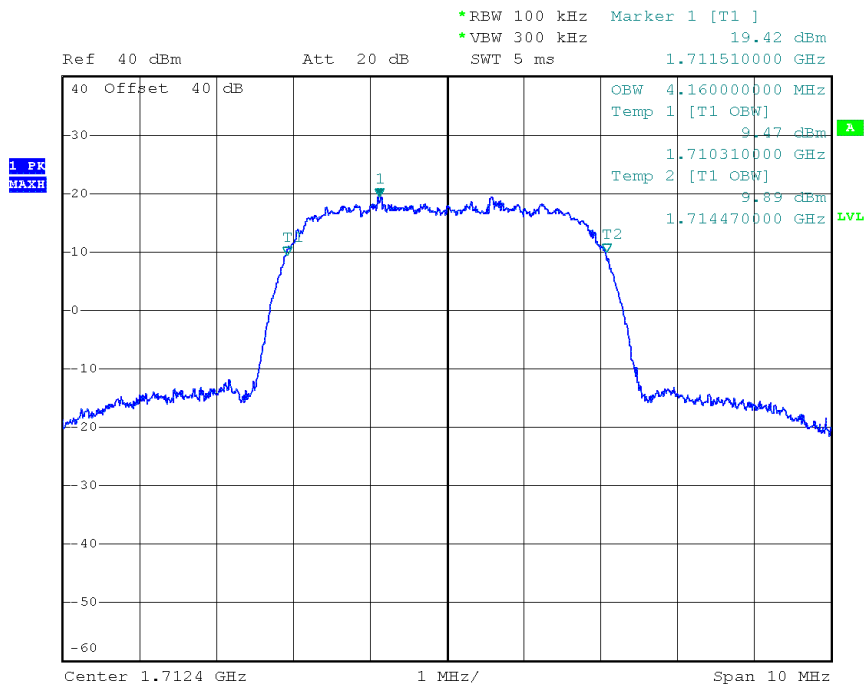
3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. to FCC 2.1046, ISED RSS-130, ISED RSS-139			
Test according to measurement reference	Reference Method		
	KDB 971168 / RSS-Gen 6.6		
Test frequency range	Tested frequencies		
	$F_{LOW} / F_{MID} / F_{HIGH}$		
Limits			
None (Informational only)			
Test setup			
 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] </pre>			
Test procedure			
<ol style="list-style-type: none"> 1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Resolution bandwidth set to 1 % of span 4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function 			
Test results – W-CDMA FDD IV			
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [MHz]
F_{LOW}	1712.4	W-CDMA - TX	4160
F_{MID}	1732.6	W-CDMA - TX	4150
F_{HIGH}	1752.4	W-CDMA - TX	4160
Comments:			

Test results – LTE FDD 4			
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [MHz]
F _{LOW}	1720.0	LTE 4 – QPSK20	17950
F _{MID}	1732,5	LTE 4 – QPSK20	17950
F _{HIGH}	1745,0	LTE 4 – QPSK20	17950
F _{LOW}	1720.0	LTE 4 – QAM20	17950
F _{MID}	1732,5	LTE 4 – QAM20	18000
F _{HIGH}	1745,0	LTE 4 – QAM20	17950
F _{LOW}	1717.5	LTE 4 – QPSK15	13500
F _{MID}	1732,5	LTE 4 – QPSK15	13500
F _{HIGH}	1747,5	LTE 4 – QPSK15	13500
F _{LOW}	1717.5	LTE 4 – QAM15	13530
F _{MID}	1732,5	LTE 4 – QAM15	13500
F _{HIGH}	1747,5	LTE 4 – QAM15	13500
Test results – LTE FDD 12			
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [MHz]
F _{LOW}	704.0	LTE 12 – QPSK10	9050
F _{MID}	707,5	LTE 12 – QPSK10	9050
F _{HIGH}	711,0	LTE 12 – QPSK10	9150
F _{LOW}	704.0	LTE 12 – QAM10	9060
F _{MID}	707,5	LTE 12 – QAM10	9050
F _{HIGH}	711,0	LTE 12 – QAM10	9090
F _{LOW}	701.5	LTE 12 – QPSK5	4720
F _{MID}	707,5	LTE 12 – QPSK5	4520
F _{HIGH}	713,5	LTE 12 – QPSK5	4520
F _{LOW}	701.5	LTE 12 – QAM5	4530
F _{MID}	707,5	LTE 12 – QAM5	4515
F _{HIGH}	713,5	LTE 12 – QAM5	4515
Test results – LTE FDD 13			
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [MHz]
F _{MID}	782,0	LTE 13 – QPSK10	9030
F _{MID}	782,0	LTE 13 – QAM10	9000
Comments:			

Occupied Bandwidth – W-CDMA FDD IV - F_{Low}
Occupied Bandwidth

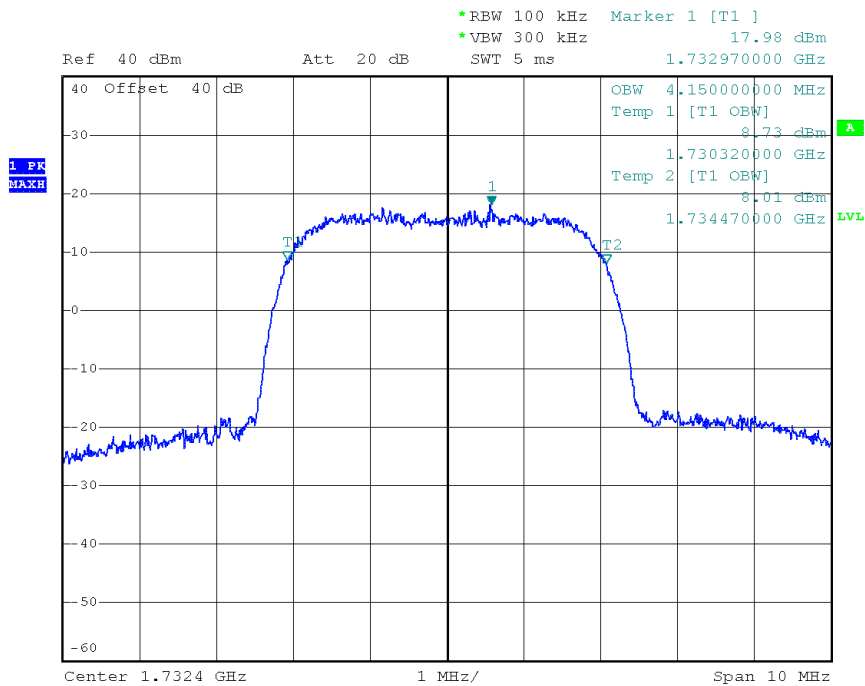
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems Technologies Pte Ltd
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: 22136
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1712.4 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-01-30
 Note: UMTS FDD IV_CH: 1312
 Occupied Bandwidth [kHz]: 4160.0



Date: 30.JAN.2019 13:58:57

Occupied Bandwidth – W-CDMA FDD IV - F_{MID}
Occupied Bandwidth

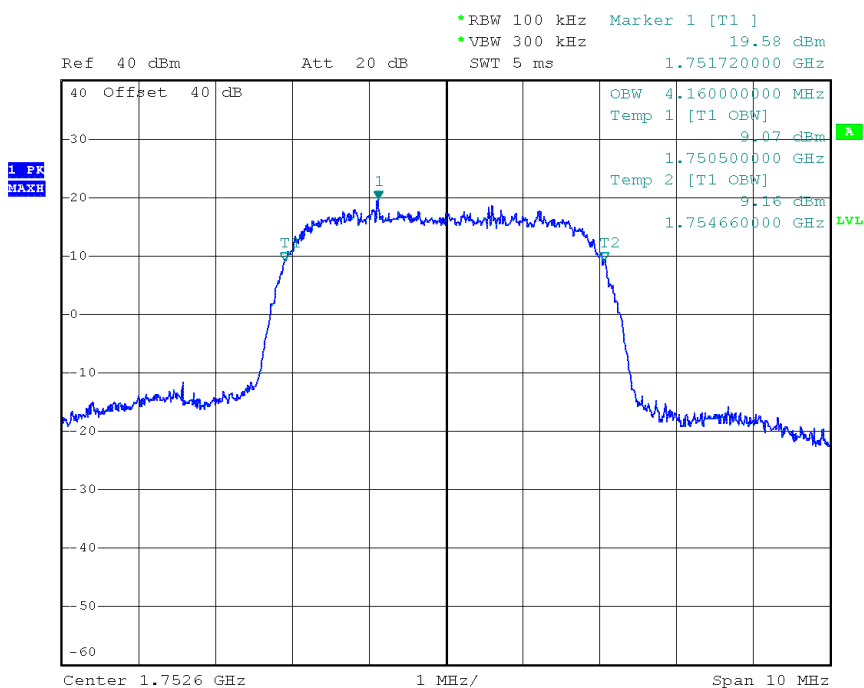
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems Technologies Pte Ltd
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: 22136
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1732.4 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-01-30
 Note: UMTS FDD IV_CH: 1412
 Occupied Bandwidth [kHz]: 4150.0



Date: 30.JAN.2019 13:53:33

Occupied Bandwidth – W-CDMA FDD IV - F_{HIGH}
Occupied Bandwidth

Project Number: G0M-1812-7888
 Applicant: Leica Geosystems Technologies Pte Ltd
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: 22136
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1752.6 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-01-30
 Note: UMTS FDD IV_CH: 1513
 Occupied Bandwidth [kHz]: 4160.0

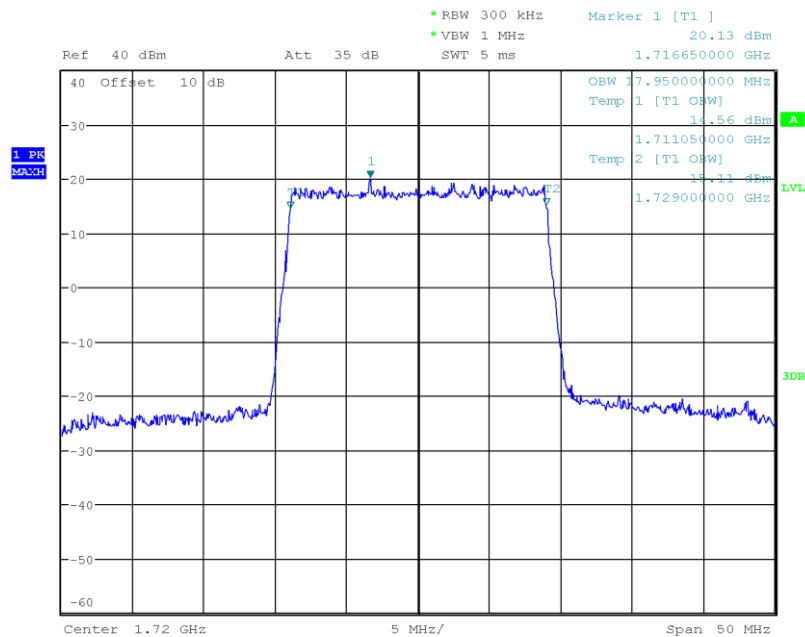


Date: 30.JAN.2019 13:48:56

Occupied Bandwidth – LTE FDD 4 QPSK20 - F_{Low}

Occupied Bandwidth

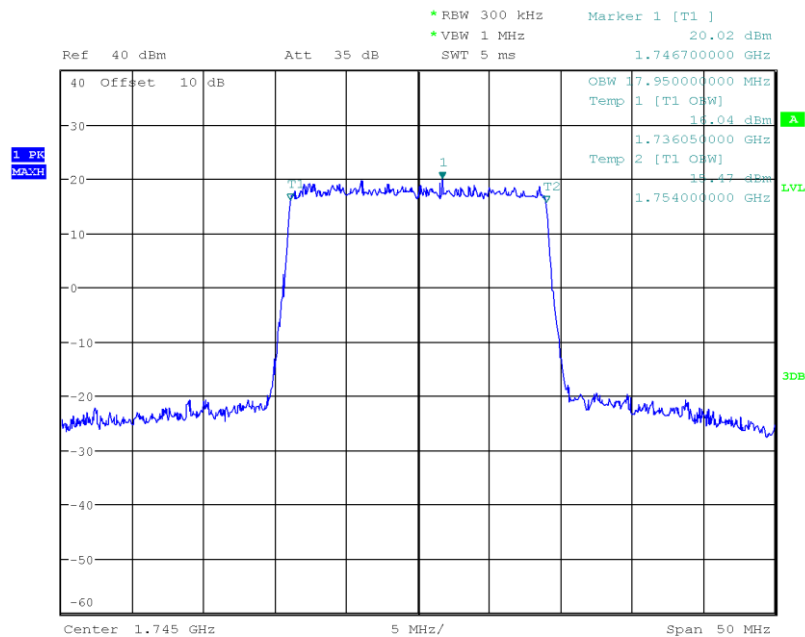
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1720 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 4_CH: 20050; QPSK; BW20; RB100
 Occupied Bandwidth [kHz]: 17950.0



Date: 28.JUN.2019 02:00:52

Occupied Bandwidth – LTE FDD 4 QPSK20 - F_{HIGH}
Occupied Bandwidth

Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1745 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 4_CH: 20300; QPSK; BW20; RB100
 Occupied Bandwidth [kHz]: 17950.0

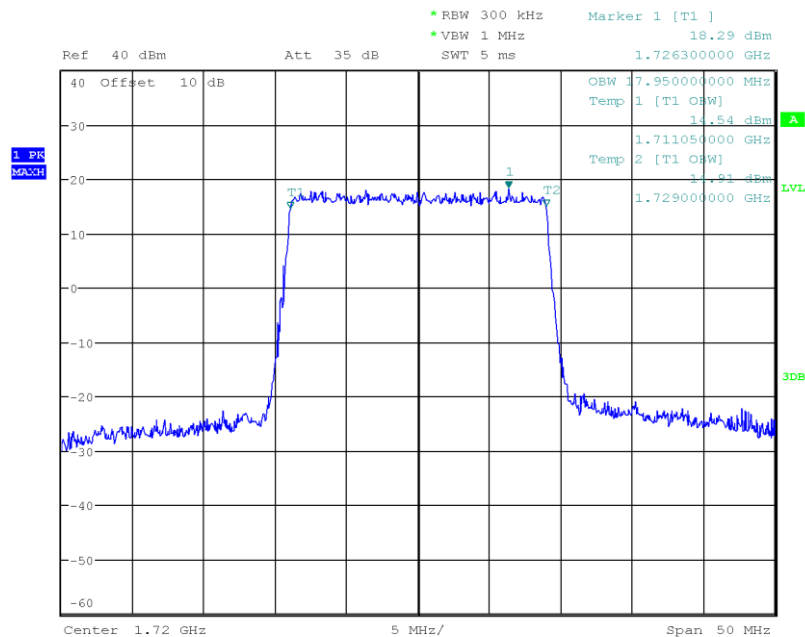


Date: 28.JUN.2019 01:53:53

Occupied Bandwidth – LTE FDD 4 QAM20 - F_{Low}

Occupied Bandwidth

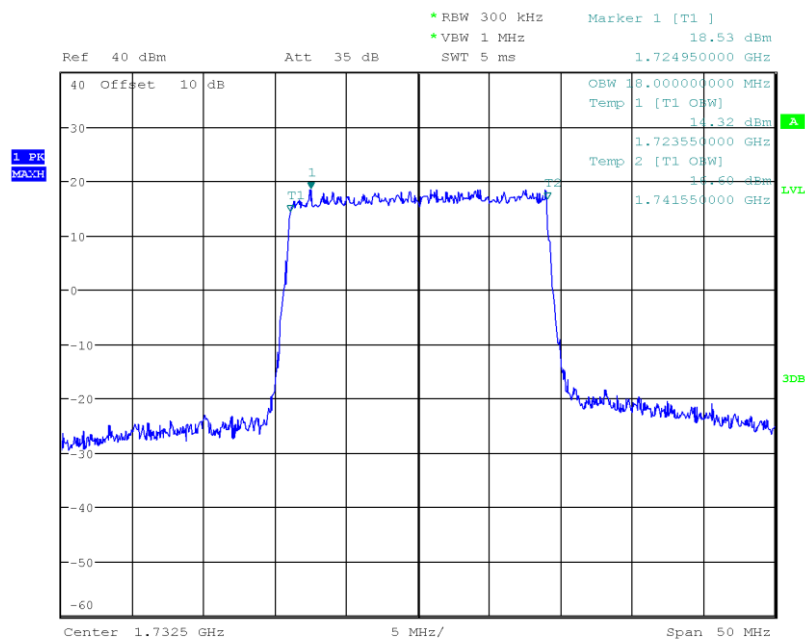
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1720 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-02
 Note: LTE FDD 4_CH: 20050; 16-QAM; BW20; RB100
 Occupied Bandwidth [kHz]: 17950.0



Date: 2.JUL.2019 07:42:19

Occupied Bandwidth – LTE FDD 4 QAM20 - F_{MID}
Occupied Bandwidth

Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1732.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-02
 Note: LTE FDD 4_CH: 20175; 16-QAM; BW20; RB100
 Occupied Bandwidth [kHz]: 18000.0



Date: 2.JUL.2019 07:40:18

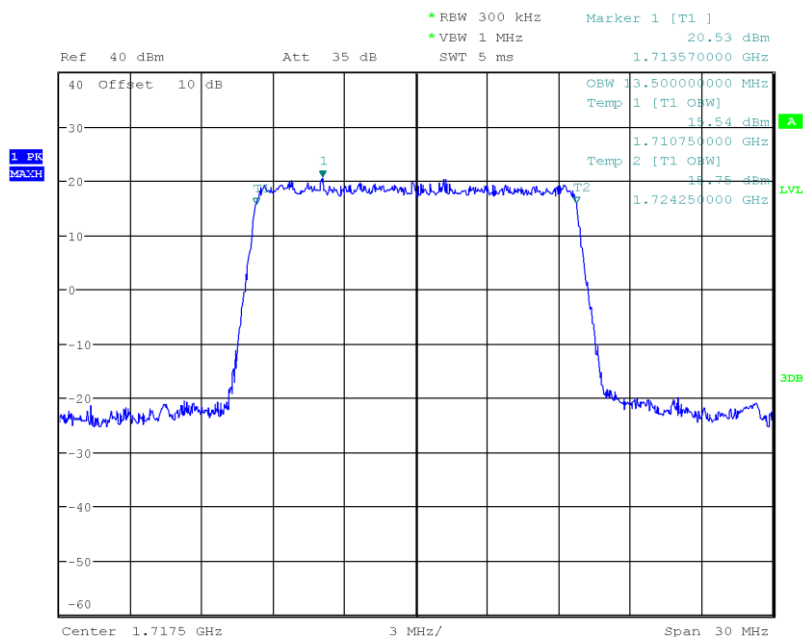
Test Report No.: G0M-1812-7888-TFC227UL-V01

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Occupied Bandwidth – LTE FDD 4 QPSK15 - F_{Low}

Occupied Bandwidth

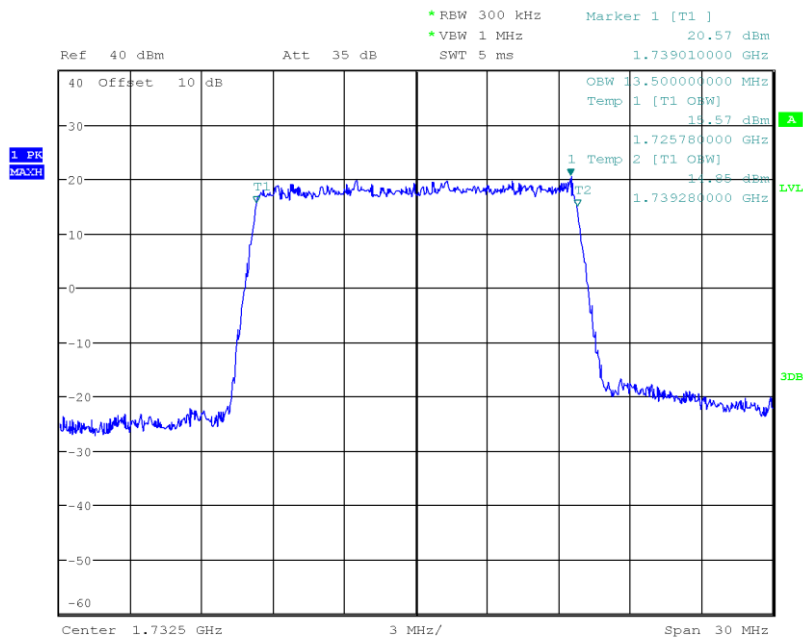
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1717.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 4_CH: 20025; QPSK; BW15; RB75
 Occupied Bandwidth [kHz]: 13500.0



Date: 28.JUN.2019 04:07:54

Occupied Bandwidth – LTE FDD 4 QAM15 - F_{MID}
Occupied Bandwidth

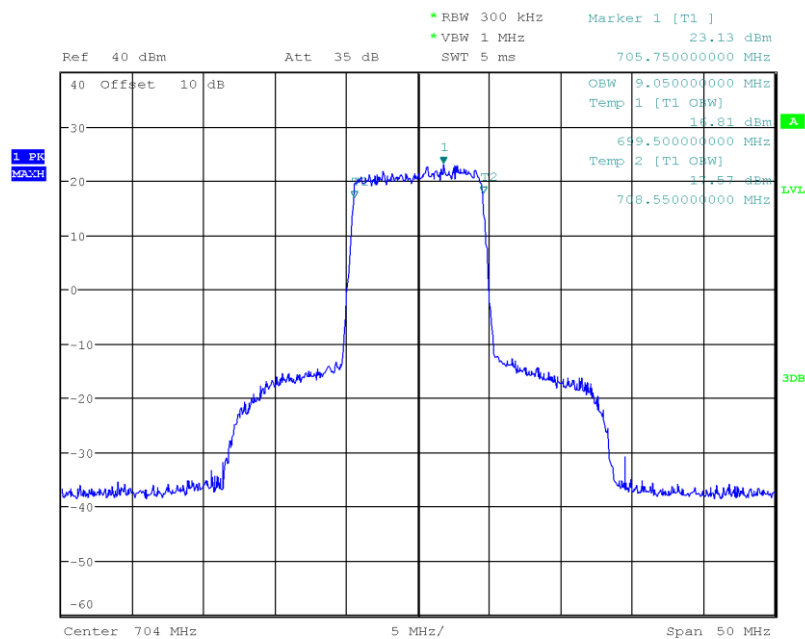
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 1732.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-02
 Note: LTE FDD 4_CH: 20175; 16-QAM; BW15; RB75
 Occupied Bandwidth [kHz]: 13500.0



Date: 2.JUL.2019 07:49:20

Occupied Bandwidth – LTE FDD 12 QPSK10 - F_{Low}
Occupied Bandwidth

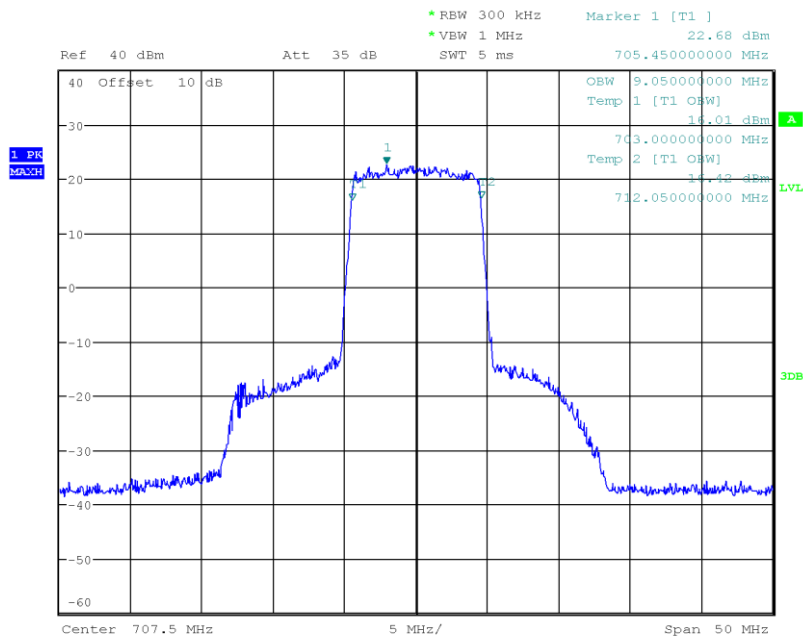
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 704.0 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 12_CH: 23060; QPSK; BW10; RB50
 Occupied Bandwidth [kHz]: 9050.0



Date: 28.JUN.2019 01:13:41

Occupied Bandwidth – LTE FDD 12 QPSK10 - F_{MID}
Occupied Bandwidth

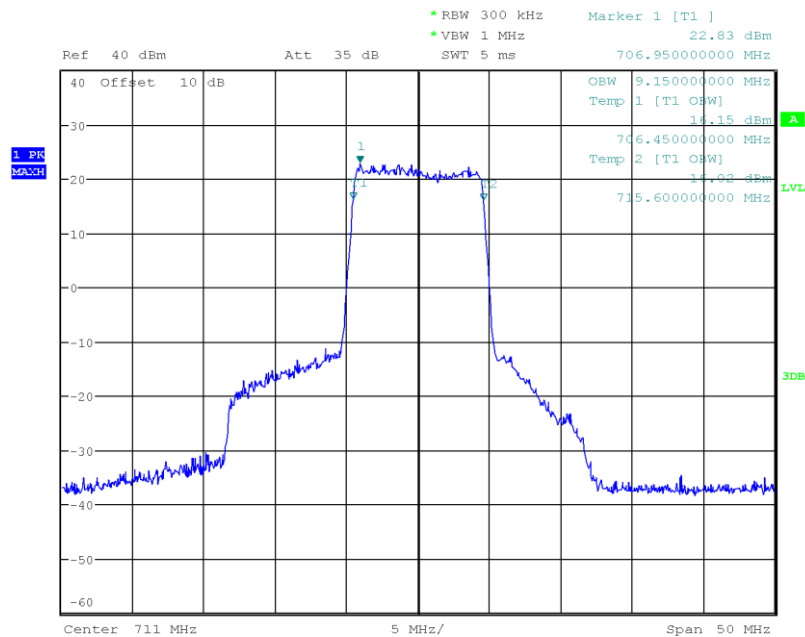
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 707.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 12_CH: 23095; QPSK; BW10; RB50
 Occupied Bandwidth [kHz]: 9050.0



Date: 28.JUN.2019 01:08:20

Occupied Bandwidth – LTE FDD 12 QPSK10 - F_{HIGH}
Occupied Bandwidth

Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 711 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 12_CH: 23130; QPSK; BW10; RB50
 Occupied Bandwidth [kHz]: 9150.0

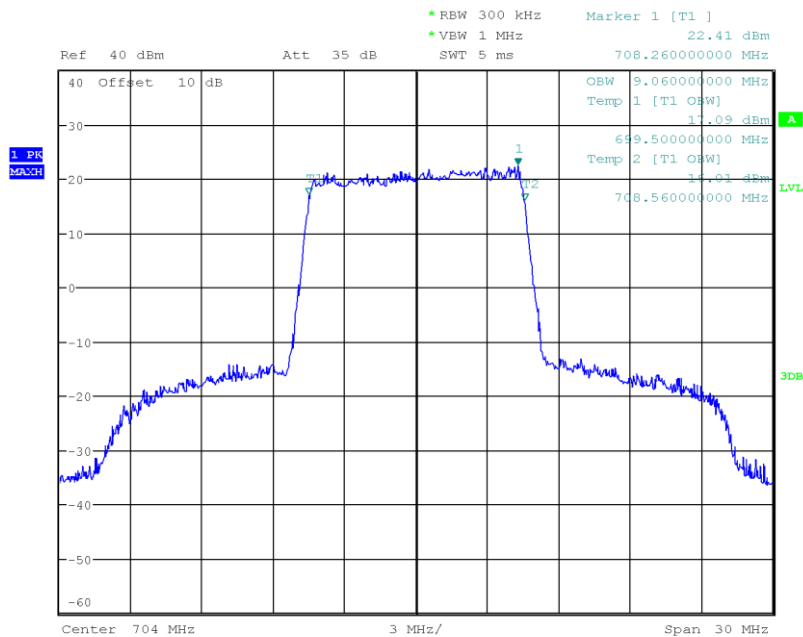


Date: 28.JUN.2019 01:05:10

Occupied Bandwidth – LTE FDD 12 QAM10 - F_{Low}

Occupied Bandwidth

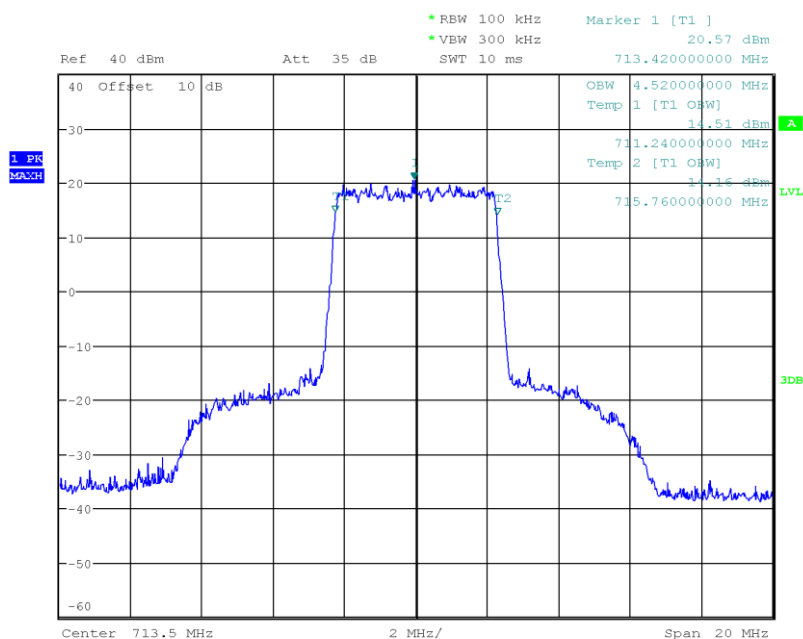
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 704 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-02
 Note: LTE FDD 12_CH: 23060; 16-QAM; BW10; RB50
 Occupied Bandwidth [kHz]: 9060.0



Date: 2.JUL.2019 08:13:28

Occupied Bandwidth – LTE FDD 12 QPSK5 - F_{HIGH}
Occupied Bandwidth

Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 713.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 12_CH: 23155; QPSK; BW5; RB25
 Occupied Bandwidth [kHz]: 4520.0



Date: 28.JUN.2019 04:24:40

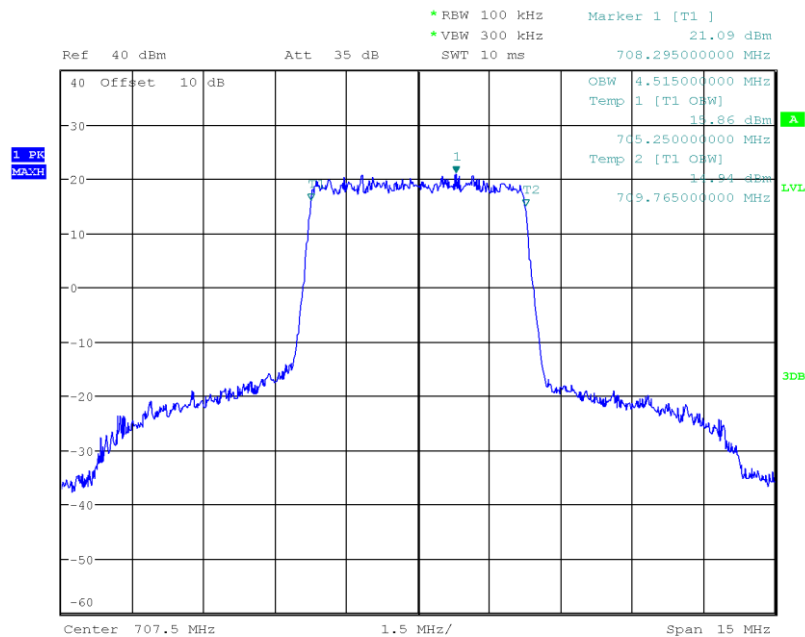
Test Report No.: G0M-1812-7888-TFC227UL-V01

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Occupied Bandwidth – LTE FDD 12 QAM5 - F_{MID}

Occupied Bandwidth

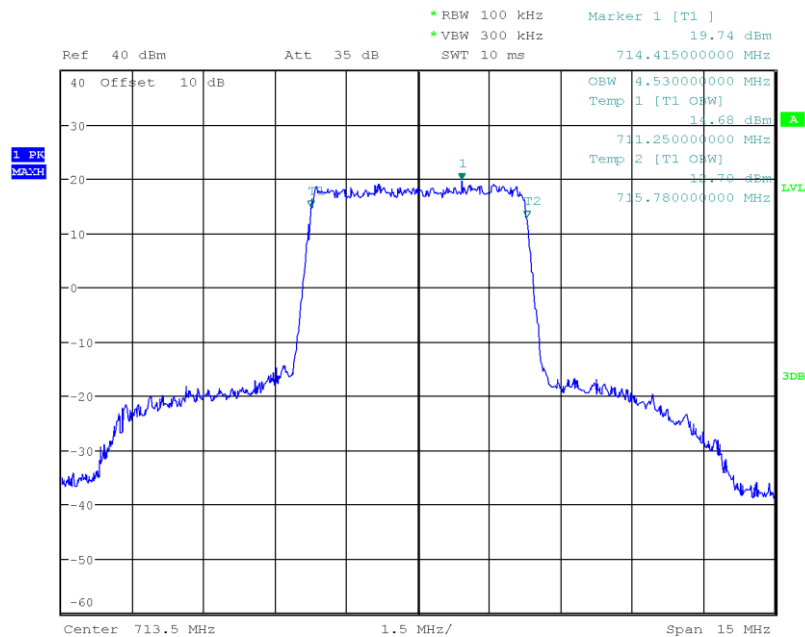
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 707.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-02
 Note: LTE FDD 12_CH: 20095; 16-QAM; BW5; RB25
 Occupied Bandwidth [kHz]: 4515.0



Date: 2.JUL.2019 08:01:57

Occupied Bandwidth – LTE FDD 12 QAM5 - F_{HIGH}
Occupied Bandwidth

Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 713.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-02
 Note: LTE FDD 12_CH: 23155; 16-QAM; BW5; RB25
 Occupied Bandwidth [kHz]: 4515.0

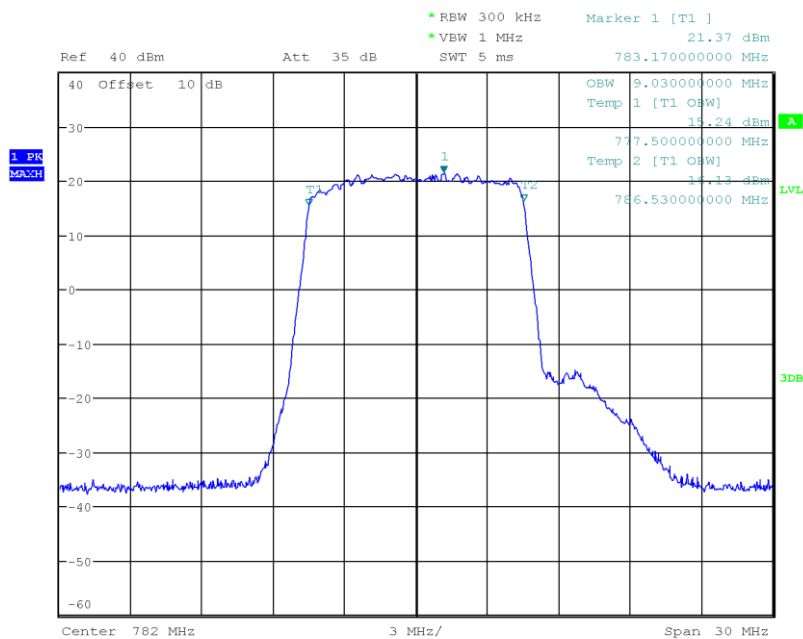


Date: 2.JUL.2019 08:07:24

Occupied Bandwidth – LTE FDD 13 QSK10 - F_{MID}

Occupied Bandwidth

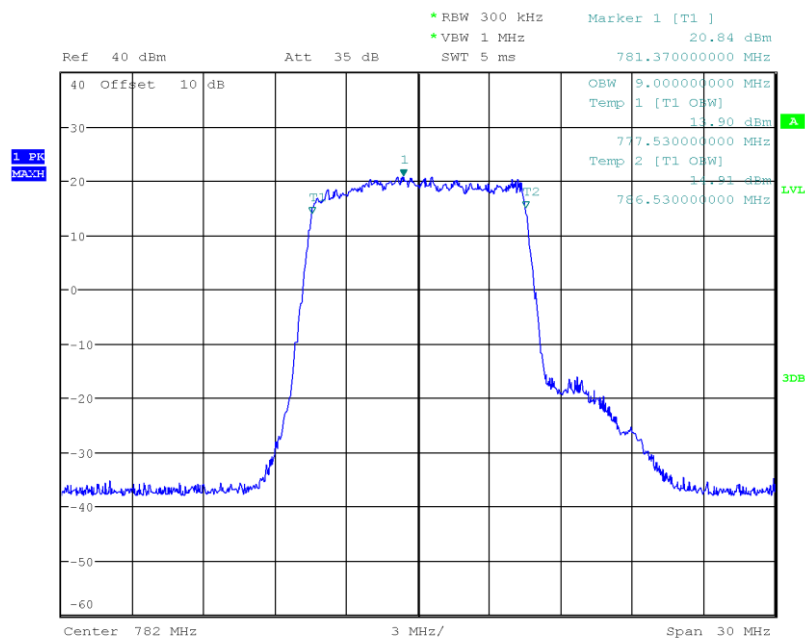
Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 782.0 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-28
 Note: LTE FDD 13_CH: 23230; QPSK; BW10; RB50
 Occupied Bandwidth [kHz]: 9030.0



Date: 28.JUN.2019 01:20:07

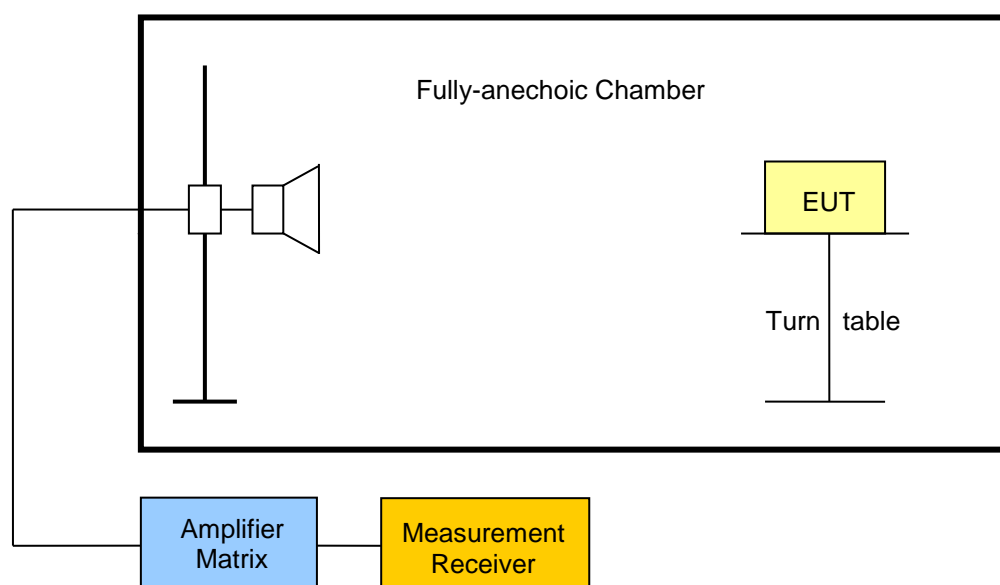
Occupied Bandwidth – LTE FDD 13 QAM10 - F_{MID}
Occupied Bandwidth

Project Number: G0M-1812-7888
 Applicant: Leica Geosystems AG
 Model Description: Field Controller Win EC7
 Model: CS20 LTE Disto (US, CA)
 Test Sample ID: S/N.: 2476141
 Reference Standards: RSS-Gen
 Reference Method: ANSI C63.26:2015, Section 5.4.4
 Operating Frequency: 782 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Burkhard Pudell
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-02
 Note: LTE FDD 13_CH: 23230; 16-QAM; BW10; RB50
 Occupied Bandwidth [kHz]: 9000.0



Date: 2.JUL.2019 08:16:27

3.2 Test Conditions and Results – Effective radiated power / Equivalent isotropic radiated power

Radiated power acc. to FCC 27 / ISED RSS-130 / ISED RSS-139		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC § 27.50(b,c)(10) / FCC § 27.50(d)(4) ISED RSS-130 4.4 / ISED RSS-139 6.5	
Test according to measurement reference	Reference Method	
	ANSI/TIA-603-D, KDB 971168	
Test frequency range	Tested frequencies	
	$F_{LOW} / F_{MID} / F_{HIGH}$	
Limits		
Carrier Frequency range	Equipment type	Power limit
698-756 MHz 776-787 MHz	Mobile transmitter	FCC : 3 Watts (34.77 dBm) e.r.p. ISED : 5 Watts (36.99 dBm) e.i.r.p.
1710-1755 MHz	Mobile transmitter	FCC : 1 Watts (30 dBm) e.i.r.p. ISED : 1 Watts (30 dBm) e.i.r.p.
Test setup		
 <p>The diagram illustrates the test setup. A Fully-anechoic Chamber is shown with a measurement antenna on the left and an EUT (Equivalent Under Test) on a turn table on the right. The EUT is connected to an Amplifier Matrix and a Measurement Receiver outside the chamber.</p>		
Test procedure		
<ol style="list-style-type: none"> 1. EUT set to test mode 2. The radiated power is measured with a measurement antenna in ver + hor polarization 3. To obtain maximum level the EUT is rotated 4. The EUT is replaced with a half-wave dipole and the power to the dipole is adjusted to obtain same radiated power measurement value 		

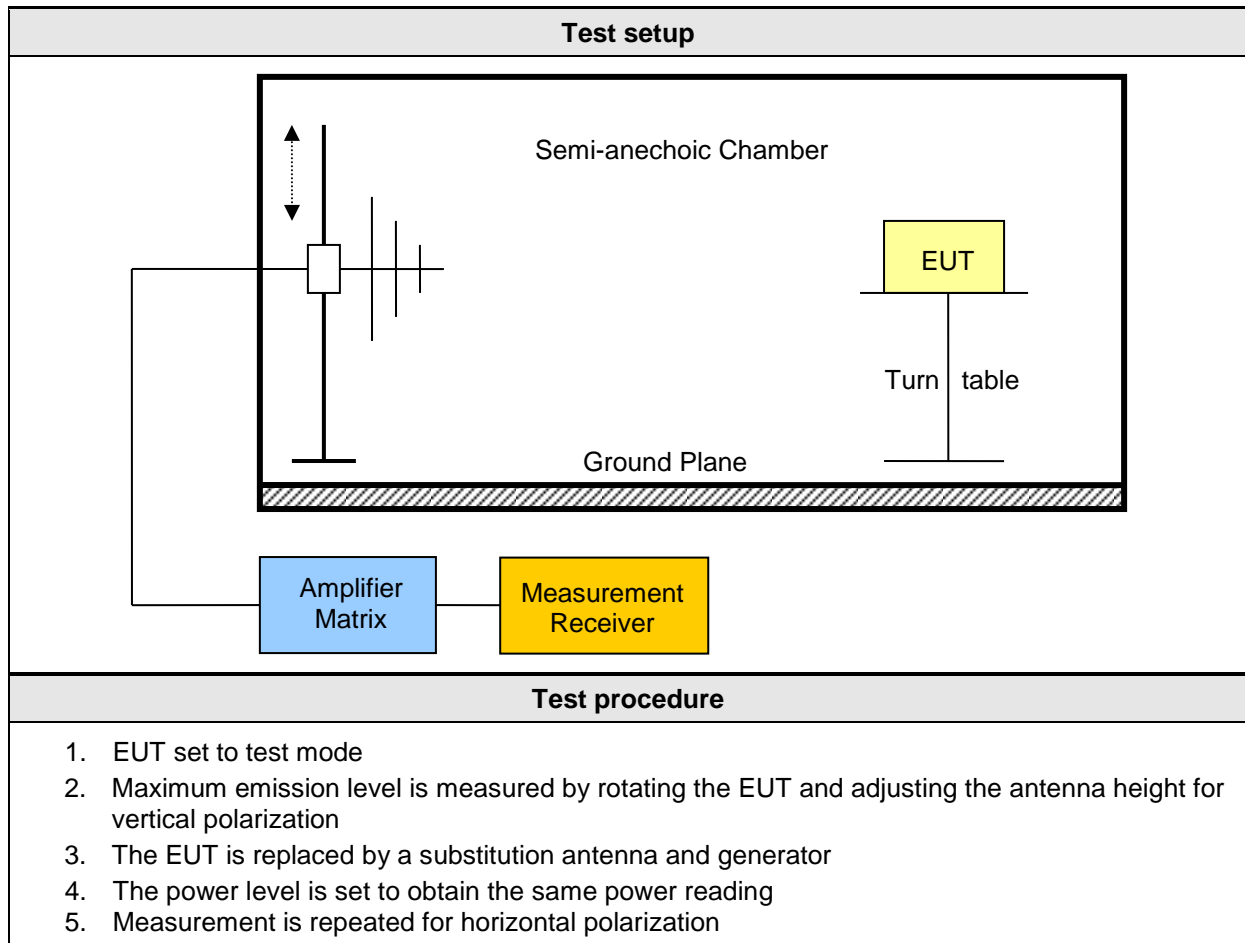
Test results – W-CDMA FDD IV / LTE FDD 4 - E.I.R.P.							
Channel	Frequency [MHz]	Mode	Pol.	Power [dBm e.i.r.p]	Limit [dBm e.i.r.p]	Margin [dB]	Result
F _{LOW}	1712.4	W-CDMA - TX	hor	25.3	30	-4.7	PASS
F _{MID}	1732.6	W-CDMA - TX	hor	24.6	30	-5.4	PASS
F _{HIGH}	1752.6	W-CDMA - TX	hor	26.0	30	-4.0	PASS
F _{LOW}	1717.5	LTE 4 - QPSK - PWR	hor	28.5	30	-1.5	PASS
F _{MID}	1732,5	LTE 4 - QPSK - PWR	hor	28.8	30	-1.2	PASS
F _{HIGH}	1747,5	LTE 4 - QPSK - PWR	hor	29.6	30	-0.4	PASS
F _{LOW}	1717.5	LTE 4 - QAM - PWR	hor	25.5	30	-4.5	PASS
F _{MID}	1732,5	LTE 4 - QAM - PWR	hor	27.5	30	-2.5	PASS
F _{HIGH}	1747,5	LTE 4 - QAM - PWR	hor	27.9	30	-2.1	PASS

Comments: For each channel and bandwidth only the polarization that gives the highest output power is reported

Test results – LTE FDD 12/13 - E.R.P.							
Channel	Frequency [MHz]	Mode	Pol.	Power [dBm e.r.p]	Limit [dBm e.r.p]	Margin [dB]	Result
F _{LOW}	701,5	LTE 12 - QPSK - PWR	ver	22.0	34.77	-12.77	PASS
F _{MID}	707,5	LTE 12 - QPSK - PWR	ver	22.9	34.77	-11.87	PASS
F _{HIGH}	713,5	LTE 12 - QPSK - PWR	ver	23.6	34.77	-11.17	PASS
F _{MID}	782,0	LTE 13 - QPSK - PWR	ver	22.0	34.77	-12.77	PASS
F _{LOW}	704,0	LTE 12 - QAM - PWR	ver	19.4	34.77	-15.37	PASS
F _{MID}	707,5	LTE 12 - QAM - PWR	ver	21.0	34.77	-13.77	PASS
F _{HIGH}	711,0	LTE 12 - QAM - PWR	ver	21.6	34.77	-13.17	PASS
F _{MID}	782,0	LTE 13 - QAM - PWR	ver	20.9	34.77	-13.87	PASS
Test results – LTE FDD 12/13 - E.I.R.P.							
Channel	Frequency [MHz]	Mode	Pol.	Power [dBm e.i.r.p]	Limit [dBm e.i.r.p]	Margin [dB]	Result
F _{LOW}	701,5	LTE 12 - QPSK - PWR	ver	24.15	36.99	-12.84	PASS
F _{MID}	707,5	LTE 12 - QPSK - PWR	ver	25.05	36.99	-11.94	PASS
F _{HIGH}	713,5	LTE 12 - QPSK - PWR	ver	25.75	36.99	-11.24	PASS
F _{MID}	782,0	LTE 13 - QPSK - PWR	ver	24.15	36.99	-12.84	PASS
F _{LOW}	701,5	LTE 12 - QAM - PWR	ver	21.55	36.99	-15.44	PASS
F _{MID}	707,5	LTE 12 - QAM - PWR	ver	23.15	36.99	-13.84	PASS
F _{HIGH}	713,5	LTE 12 - QAM - PWR	ver	23.75	36.99	-13.24	PASS
F _{MID}	782,0	LTE 13 - QAM - PWR	ver	23.05	36.99	-13,94	PASS
Comments: For each channel and bandwidth only the polarization that gives the highest output power is reported							

3.3 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated power acc. to FCC 27 / ISED RSS-130 / ISED RSS-139						Verdict: PASS
Test according referenced standards		Reference Method				
		FCC § 27.53(c), FCC § 27.53(h) ISED RSS-130 4.6, ISED RSS-139 6.6				
Test according to measurement reference		Reference Method				
		ANSI/TIA-603-D, KDB 971168				
Test frequency range		Tested frequencies				
		30 MHz – 10 th Harmonic				
Limits						
Region	Operating Frequency range [MHz]	Type	Frequency Range [MHz]	Bandwidth [kHz]	Limit [dBm]	
FCC	698-758 776-788	Mobile	10 – 703.9	100	43 + 10 · log ₁₀ (P) [dB] = -13	
			703.9 – 704	30	43 + 10 · log ₁₀ (P) [dB] = -13	
			716 – 716.1	30	43 + 10 · log ₁₀ (P) [dB] = -13	
			716.1 – 10 th harmonic	100	43 + 10 · log ₁₀ (P) [dB] = -13	
ISED	698-756 777-787	Mobile	10 – 703.9	100	43 + 10 · log ₁₀ (P) [dB] = -13	
			703.9 – 704	30	43 + 10 · log ₁₀ (P) [dB] = -13	
			716 – 716.1	30	43 + 10 · log ₁₀ (P) [dB] = -13	
			716.1 – 10 th harmonic	100	43 + 10 · log ₁₀ (P) [dB] = -13	
FCC ISED	1710-1755	Mobile	10 – 1709	1000	43 + 10 · log ₁₀ (P) [dB] = -13	
			1709 – 1710	1 % of EBW	43 + 10 · log ₁₀ (P) [dB] = -13	
			1755 – 1756	1 % of EBW	43 + 10 · log ₁₀ (P) [dB] = -13	
			1756 - 10 th harmonic	1000	43 + 10 · log ₁₀ (P) [dB] = -13	



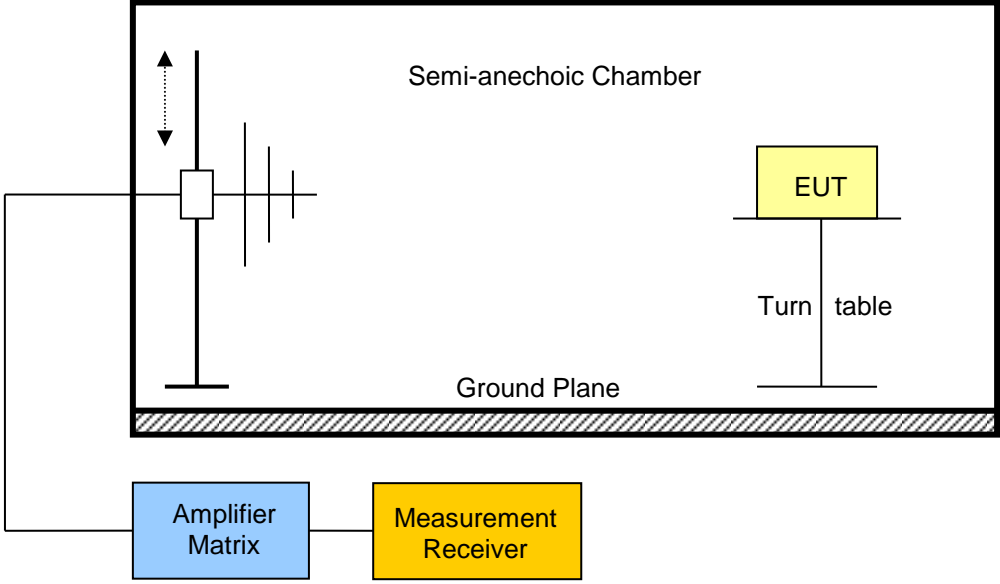
Test results – W-CDMA FDD IV								
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbm]	Pol.	Limit [dBm]	Margin [dB]	
F _{LOW}	1712.4	W-CDMA - TX	1709	-18.2	hor	-13	-5.2	
F _{LOW}	1712.4	W-CDMA - TX	1710	-24.7	ver	-13	-11.7	
F _{MID}	1732.4	W-CDMA - TX	*)					
F _{HIGH}	1752.6	W-CDMA - TX	1755	-16.4	ver	-13	-3.4	
F _{HIGH}	1752.6	W-CDMA - TX	1756	-18.0	hor	-13	-5.0	
Comments: *) No significant spurious emissions								

Test results – LTE 4								
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbm]	Pol.	Limit [dBm]	Margin [dB]	
F _{LOW}	1717.5	LTE 4 - QPSK - PWR	1709	-22.0	hor	-13	-9.0	
F _{MID}	1732.5	LTE 4 - QPSK - PWR	*)					
F _{HIGH}	1747.5	LTE 4 - QPSK - PWR	1756	-24.1	ver	-13	-11.1	
F _{HIGH}	1747.5	LTE 4 - QPSK - PWR	1756	-21.7	hor	-13	-8.7	
F _{LOW}	1717.5	LTE 4 - QAM - PWR	*)					
F _{MID}	1732.5	LTE 4 - QAM - PWR	*)					
F _{HIGH}	1747.5	LTE 4 - QAM - PWR	*)					
Comments: *) No significant spurious emissions								

Test results – LTE 12								
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbm]	Pol.	Limit [dBm]	Margin [dB]	
F _{LOW}	701.5	LTE 12 - QPSK - PWR	*)					
F _{MID}	707.5	LTE 12 - QPSK - PWR	*)					
F _{HIGH}	713.5	LTE 12 - QPSK - PWR	*)					
F _{LOW}	701.5	LTE 12 - QAM - PWR	*)					
F _{MID}	707.5	LTE 12 - QAM - PWR	*)					
F _{HIGH}	713.5	LTE 12 - QAM - PWR	*)					
Comments: *) No significant spurious emissions								

Test results – LTE 13								
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbm]	Pol.	Limit [dBm]	Margin [dB]	
F _{MID}	782.0	LTE 13 - QPSK - PWR	*)					
F _{MID}	782.0	LTE 13 - QAM - PWR	*)					
Comments: *) No significant spurious emissions								

3.4 Test Conditions and Results – Receiver radiated emissions

Receiver radiated emissions acc. to ISED RSS-130 / ISED RSS-139		Verdict: PASS		
Test according referenced standards	Reference Method			
	ISED RSS-Gen 7.1			
Test according to measurement reference	Reference Method			
	ANSI C63.4			
Test frequency range	Tested frequencies			
	30 MHz – 5 th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [μ V/m]	Limit [dB μ V/m]	Limit Distance [m]*
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				
 <p>The diagram illustrates the test setup within a Semi-anechoic Chamber. The chamber sits on a Ground Plane. An EUT (Equipment Under Test) is placed on a Turn table. A probe is positioned to measure the emissions. The chamber is connected to an Amplifier Matrix, which is connected to a Measurement Receiver.</p>				

Test procedure							
1. EUT set to receive mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1MHz with peak/average detector is used above 1GHz 4. Markers are set to peak emission levels							
Test results – RSS-130							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [db μ V/m]	Emission Level [μ V/m]	Det.	Limit [μ V/m]	Margin [μ V/m]
F _{MID} 5095	737.5	136.76	33.28	46	pk	150	-104
F _{MID} 5095	737.5	3676	43.87	160	pk	500	-340
F _{MID} 5230	751.0	30.68	30.98	35	pk	100	-65
F _{MID} 5230	751.0	131.66	34.00	50	pk	150	-100
Comments: * Physical distance between EUT and measurement antenna. ** Emission level corresponds to ambient noise floor							

Test results – RSS-139							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [db μ V/m]	Emission Level [μ V/m]	Det.	Limit [μ V/m]	Margin [μ V/m]
F _{MID} 1637	2132.4	7064	50.34	330	pk	500	-170
F _{MID} 2175	2132.5	7520	50.01	320	pk	500	-180
F _{MID} 2175	2132.5	7768	49.92	310	pk	500	-190
Comments: * Physical distance between EUT and measurement antenna. ** Emission level corresponds to ambient noise floor							