FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC22&24&27_RM-927_15.docx	**Date of Report:**	19-Aug-13
Number of pages:	24	**Customer's Contact person:**	Victoria Abadilla
Testing laboratory:	TCC Nokia San Diego Laboratory 16620 West Bernardo Drive San Diego, CA 92127 USA Tel. +1 858 831 5000 Fax. +1 858 831 6500	**Customer:**	Nokia, Inc. 16620 West Bernardo Drive San Diego, CA 92127 USA Tel. +1 858 831 5000 Fax. +1 858 385 1598
FCC listing no.: **IC recognition no.:**	586140 10162A-1		
Tested devices/ accessories:	**Phone RM-927 / Dummy Battery SD-217R**		
FCC ID:	QMND	**IC:**	661X-D
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Parts 22/24/27 , TIA-603-C-2004 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".**		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	**The EUT complies with the requirements in respect of all parameters subject to the test.** The test results relate only to devices specified in this document		
Date and signature for the contents:	 Digitally signed by You Feng Date: 2013.08.19 16:43:57 -07'00'		

Feng You, Senior Specialist

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1. Summary for FCC Part 22/24/27 Compliance Test Report

Date of receipt	20-Jul-2013
Testing completed	19-Aug-13
The customer's contact person	Victoria Abadilla
Test Plan referred to	T:\Projects\RM-927\TestPlan\RS_testplan_RM-927.xlsm
Notes	-
Document name	T:\Projects\RM-927\EMC\FCC22&24&27_RM-927_15.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:
GSM/CDMA/WCDMA/LTE/WLAN/Bluetooth
The EUT is tested with maximum rated TX power.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-927	355906050012839	0161	-	1028.0305.1329.2000	30727
Dummy Battery	SD-217R	50398	0.3	-	-	30739
Phone	RM-927	355906050012797	0161	-	1028.0305.1329.2000	30735
Dummy Battery	SD-217R	50389	0.3	-	-	30740

1.2. Summary of Test Results

GSM850:

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	NP
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	NP
§2.1055(a)	4.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	4.3	Frequency stability, voltage variation	PASSED

WCDMA 850 (Band V):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	NP
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	NP
§2.1055(a)	4.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3	Frequency stability, voltage variation	NP

GSM1900:

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	NP

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§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	NP
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	6.3	Frequency stability, voltage variation	PASSED

WCDMA 1900 (Band II):

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	NP
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

LTE1700 (Band 4):

Section in CFR 47	Section in RSS-GEN or RSS-139	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§27.50(d)(4)	6.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§27.53(h)	6.5	Band edge compliance	NP
§27.53(h), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§27.53(h), §2.1053	6.5	Spurious radiated emissions	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	6.3	Frequency stability, voltage variation	PASSED
N/A	N/A	Peak to average power ratio	NP

LTE700 Upper (Band 13):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046 (a)	N/A	Conducted RF output power	NP
§27.50(b)(10)	N/A	Radiated RF output power	NP
§2.1049(h)	N/A	99 % occupied bandwidth	PASSED
§27.53(c)(2)(4)	N/A	Band edge compliance	NP
§27.53(c)(2)(4),(f), §2.1051	N/A	Spurious emissions at antenna terminals	NP
§27.53(c)(2)(4),(f), §2.1053	N/A	Spurious radiated emissions	NP
§2.1055(a)	N/A	Frequency stability, temperature variation	PASSED
§2.1055(d)	N/A	Frequency stability, voltage variation	PASSED
N/A	N/A	Peak to average power ratio	NP

CDMA800:

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED

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CDMA1900:

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED

PASSED	The EUT complies with the essential requirements in the standard.
FAILED	The EUT does not comply with the essential requirements in the standard.
NP	The test was not performed by the TCC Nokia Laboratory.

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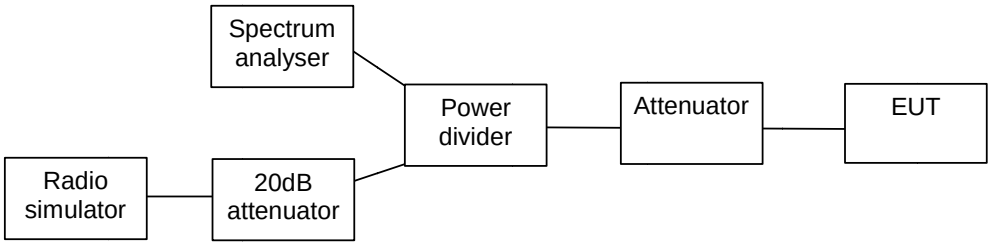
2. 99% occupied bandwidth

(FCC §2.1049(h), RSS-GEN 4.6.1)

EUT with DUT number	RM-927, DUT 30738, DUT30735
Accessories with DUT numbers	SD-217R, DUT 30742, DUT30740
Operation Voltage [V] / [Hz]	3.8V DC
Results	PASSED
Remarks	
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 1050
Date of measurements	02-Aug-2013
Measured by	Feng You

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to FCC rules parts 22, 24, 27 and IC standard RSS-GEN.

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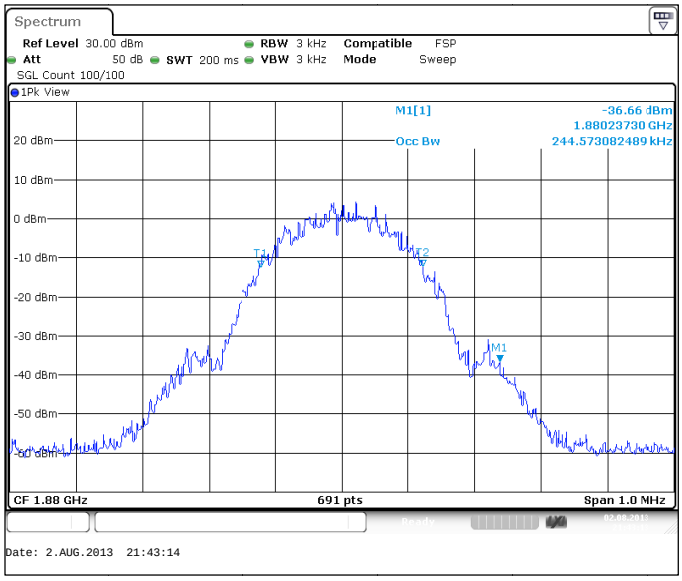
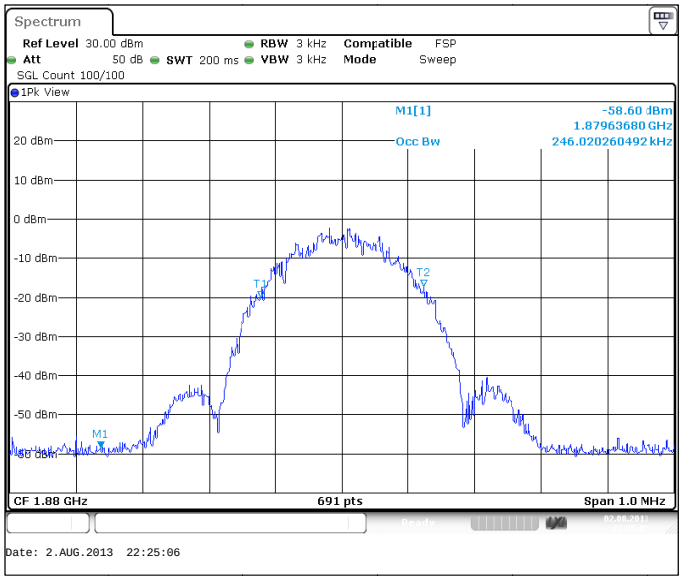
2.3. GSM 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	244.6
EGPRS	246

GSM, Channel 661 / 1880.0 MHz



EGPRS, Channel 661 / 1880.0 MHz



2.4. GSM 850 Test results

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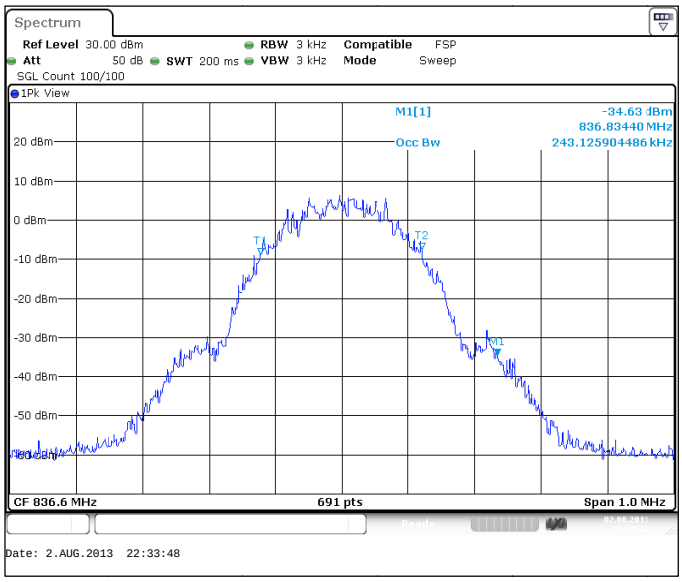
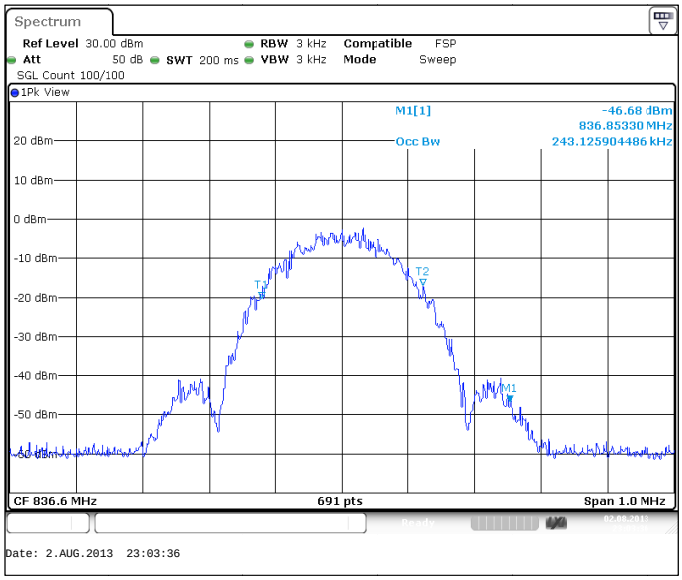
Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	243.1
EGPRS	243.1

GSM, Channel 190 / 836.6 MHz



EGPRS, Channel 190 / 836.6 MHz



2.5. WCDMA 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]

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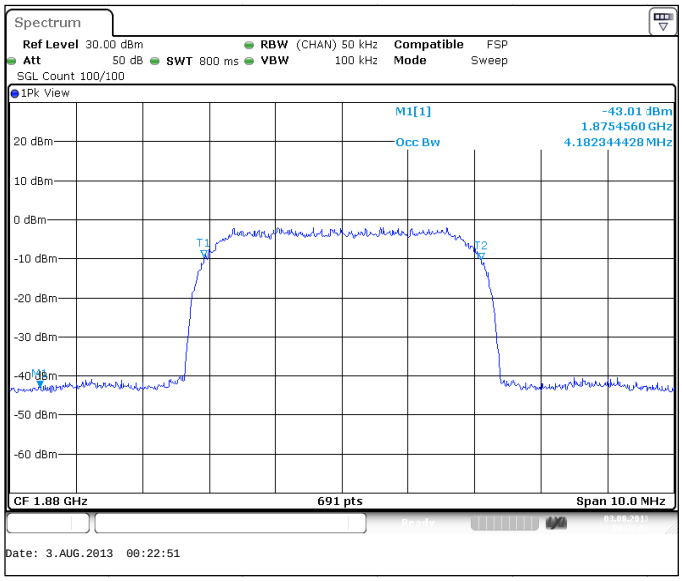
FDD	4182.3

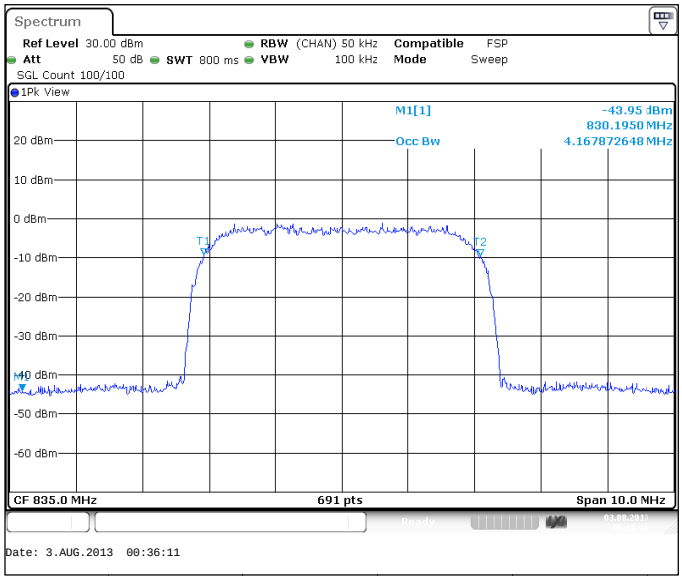
FDD, Channel 9400 / 1880.0 MHz



2.6. WCDMA 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4167.9

FDD, Channel 4175 / 835.0 MHz



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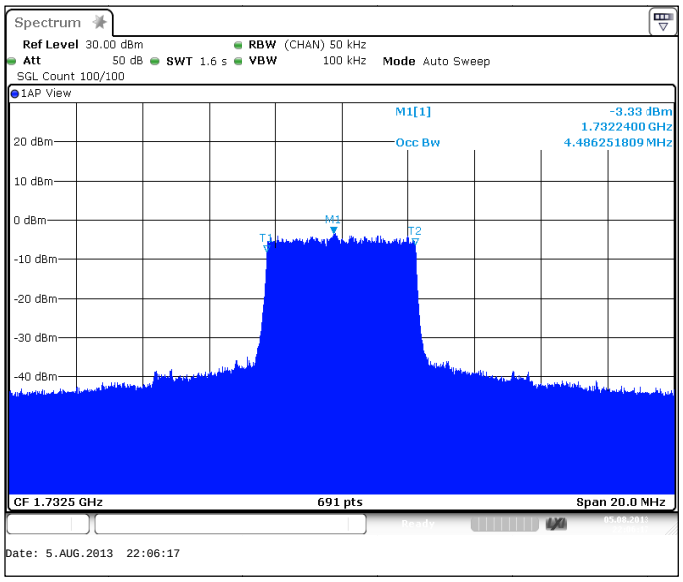
2.7. LTE1700 (Band 4) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, INV RB	4486.3
FDD, CBW 10MHz, QPSK, INV RB	8943.6
FDD, CBW 15MHz, QPSK, INV RB	13371.9
FDD, CBW 20MHz, QPSK, INV RB	17829.2
FDD, CBW 5MHz, 16QAM, INV RB	4457.3
FDD, CBW 10MHz, 16QAM, INV RB	8914.6
FDD, CBW 15MHz, 16QAM, INV RB	13371.9
FDD, CBW 20MHz, 16QAM, INV RB	17800.3

FDD, CBW 5MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



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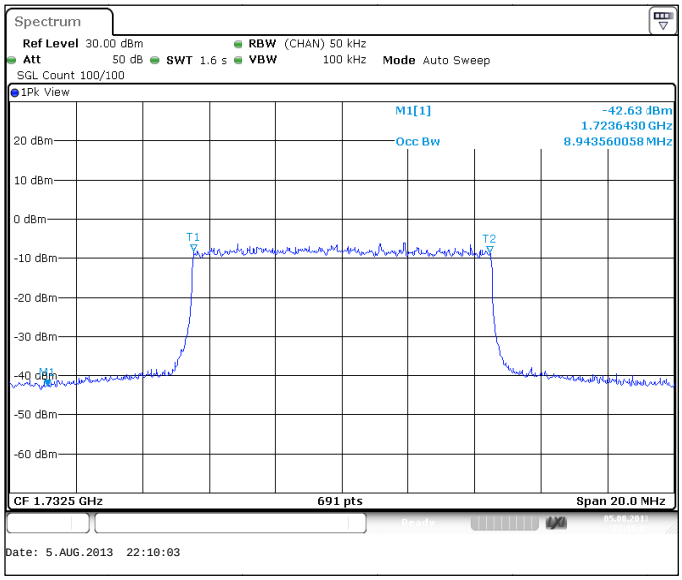
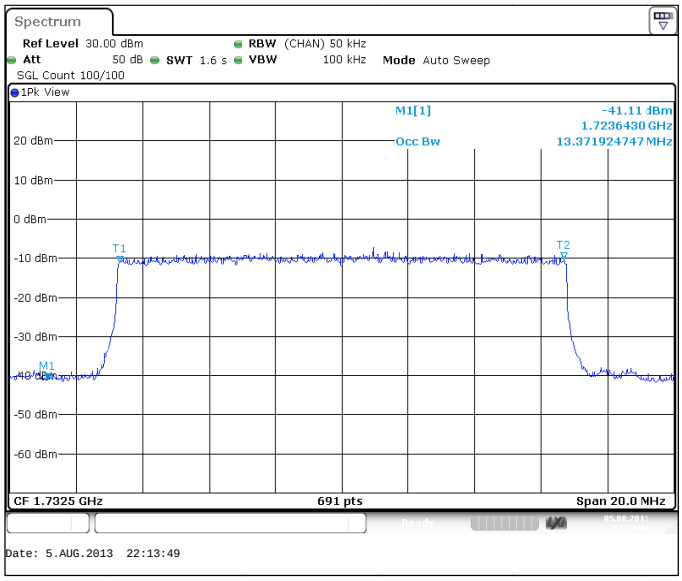
FDD, CBW 10MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 15MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



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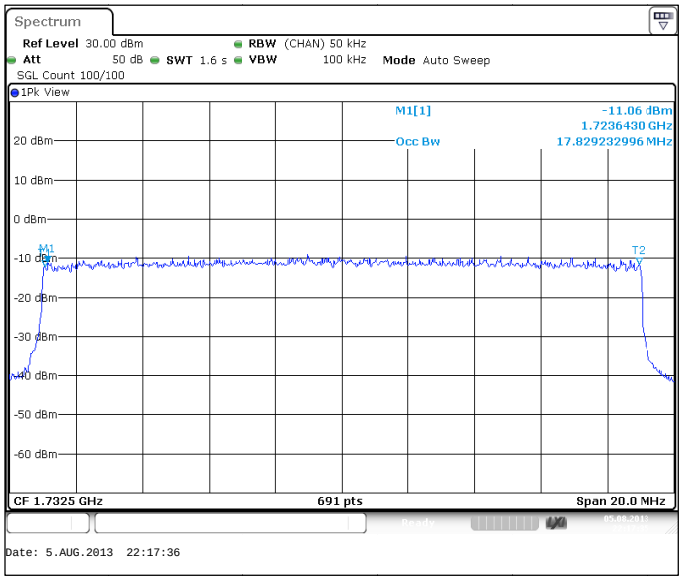
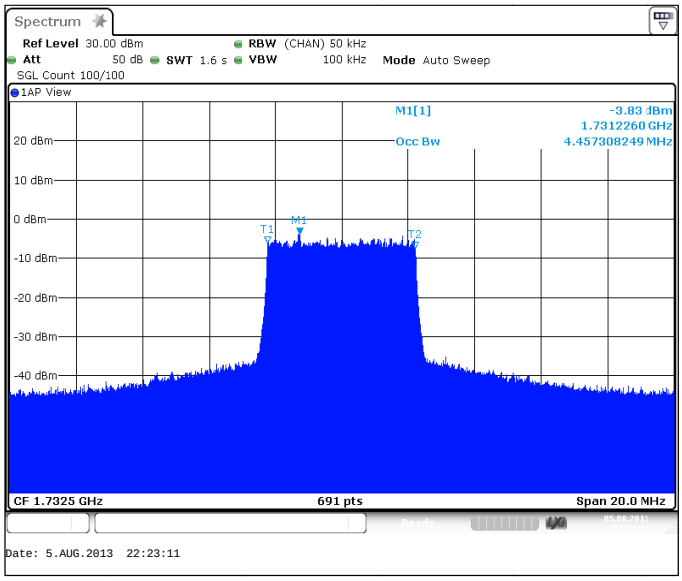
FDD, CBW 20MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 5MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



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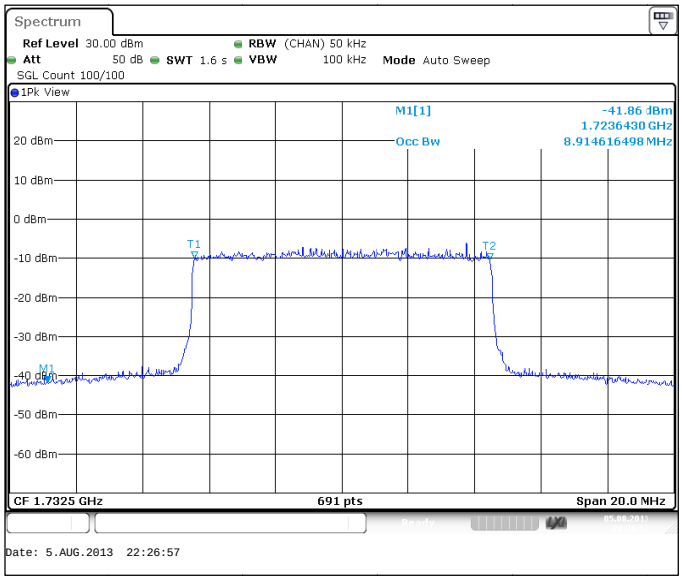
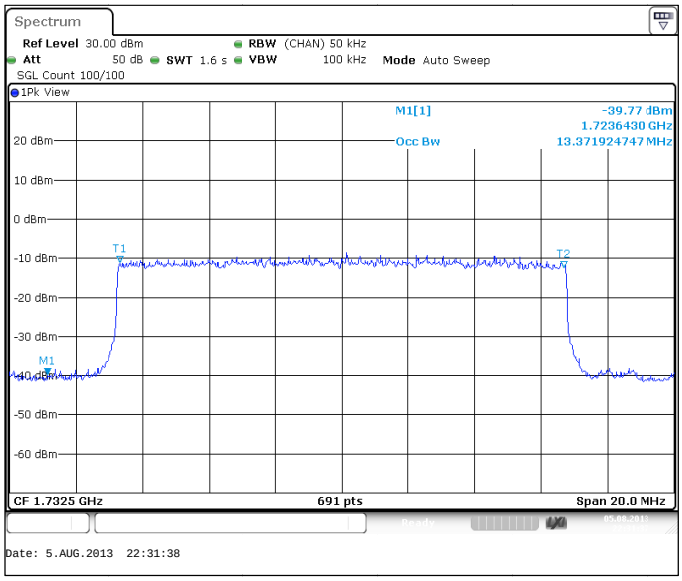
FDD, CBW 10MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 15MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



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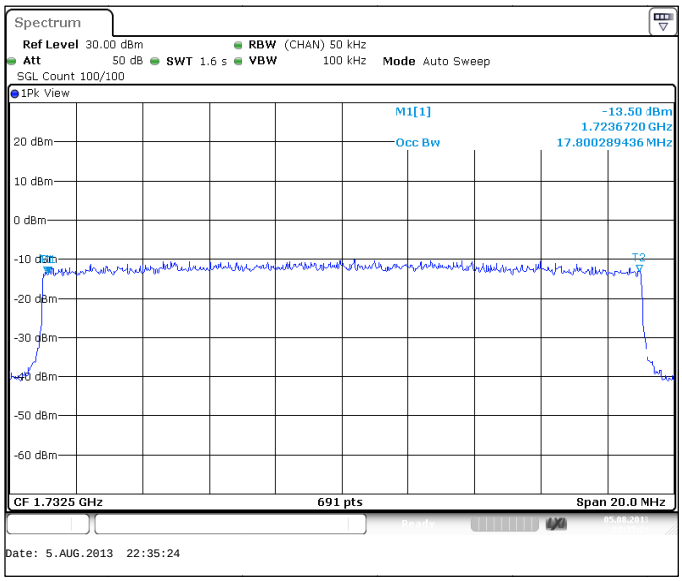
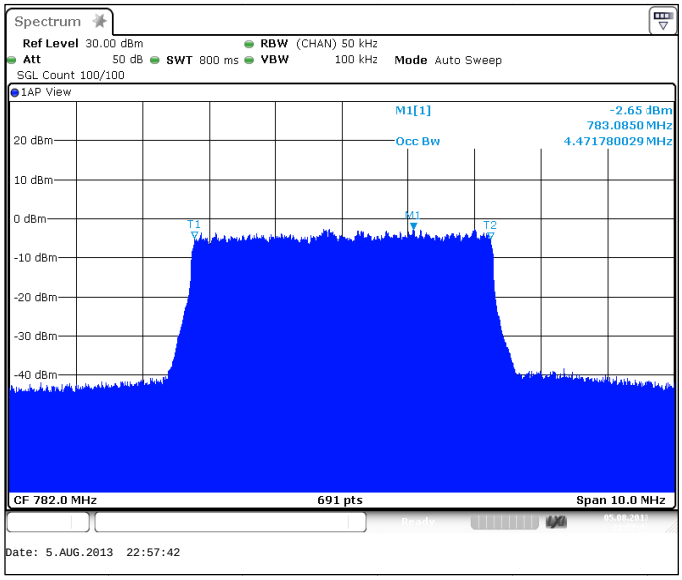
FDD, CBW 20MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



2.8. LTE700 Upper (Band 13) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, INV RB	4471.8
FDD, CBW 10MHz, QPSK, INV RB	8929.1
FDD, CBW 5MHz, 16QAM, INV RB	4471.8
FDD, CBW 10MHz, 16QAM, INV RB	8900.1

FDD, CBW 5MHz, QPSK, INV RB, Channel 23230 / 782.0 MHz



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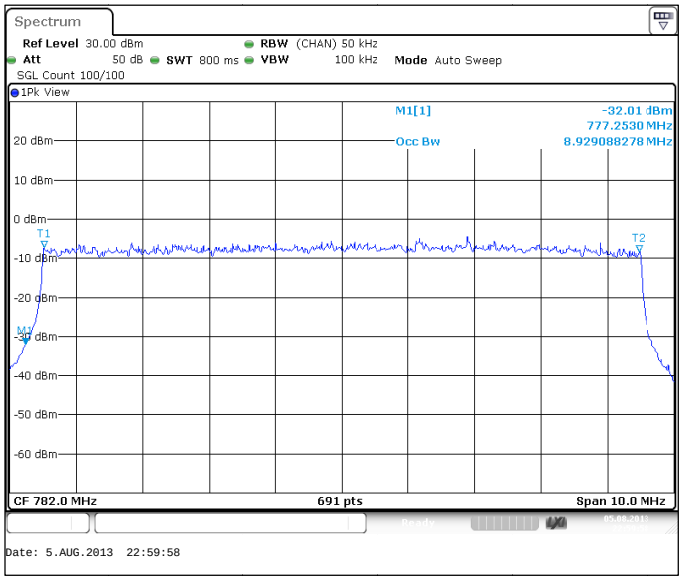
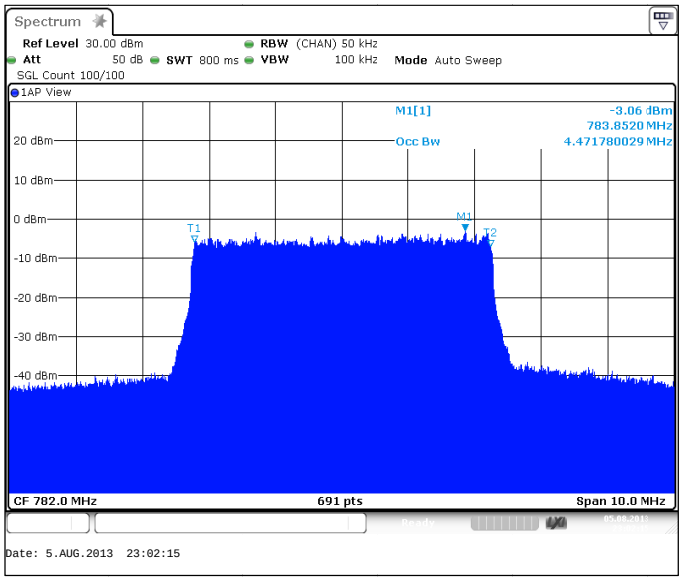
FDD, CBW 10MHz, QPSK, INV RB, Channel 23230 / 782.0 MHz



FDD, CBW 5MHz, 16QAM, INV RB, Channel 23230 / 782.0 MHz



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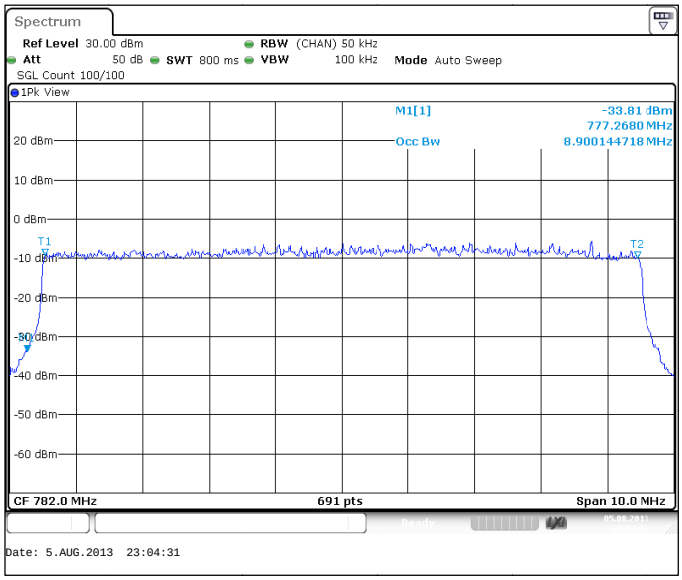
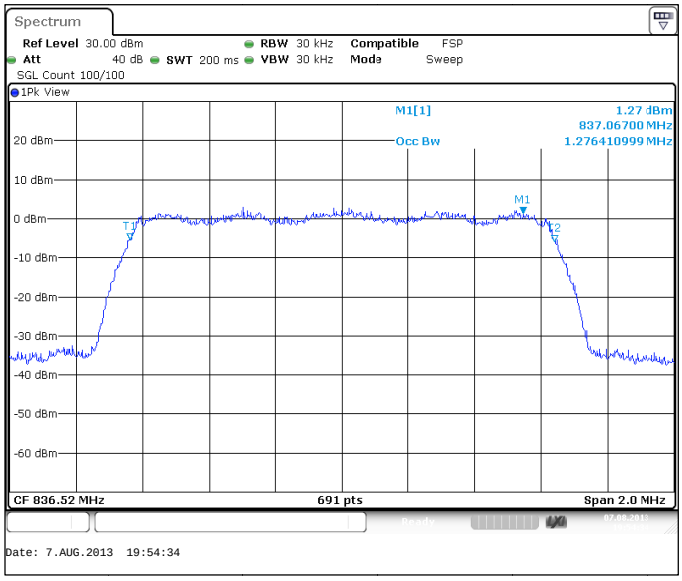
FDD, CBW 10MHz, 16QAM, INV RB, Channel 23230 / 782.0 MHz



2.9. CDMA 800 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
CDMA	1276.4

CDMA, Channel 384 / 836.52 MHz



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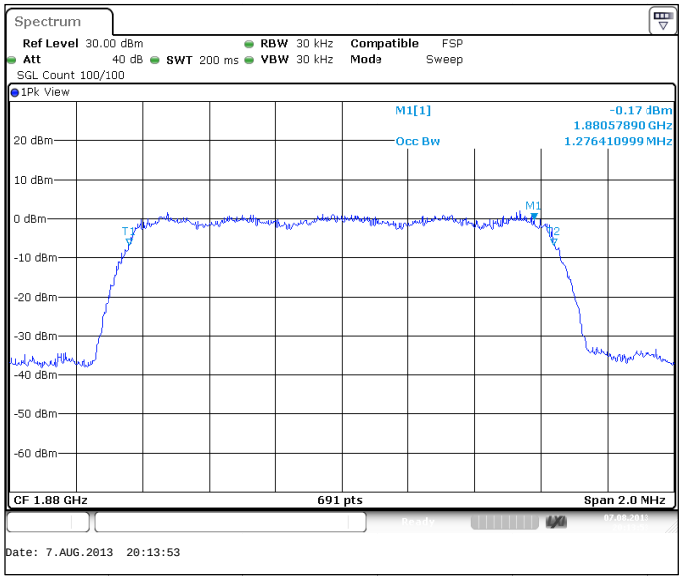
2.10. CDMA 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
CDMA	1276.4

CDMA, Channel 600 / 1880.0 MHz



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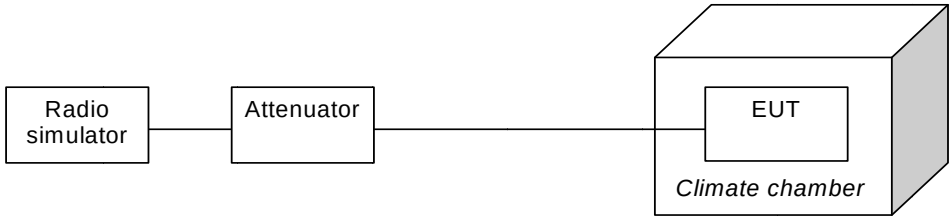
3. Frequency stability, temperature variation
(FCC §2.1055(a), RSS-132 4.3, RSS-133 6.3, RSS-139 6.3)

EUT with DUT number	RM-927, DUT 30727
Accessories with DUT numbers	SD-217R, DUT 30739
Operation Voltage [V] / [Hz]	3.8V DC
Results	PASSED
Remarks	
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21.8 / 49.2 / 1050
Date of measurements	06-Aug-2013
Measured by	Feng You

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to FCC rules parts 22, 24, 27 and IC standard RSS-132, RSS-133 and RSS-139
as follows:

The climate chamber temperature is set to the maximum value and the temperature is allowed to stabilize.
The EUT is placed in the chamber.
The EUT is set in idle mode for 15 minutes.
The EUT is set to transmit.
The transmit frequency error was measured immediately.
The steps c - e were repeated for each temperature.Limits for frequency stability, temperature variation measurements

Frequency deviation [ppm]
+\- 2.5

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3.3. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880.00	-9.62000	-0.0051	PASSED
40	1880.00	-21.37000	-0.0114	PASSED
30	1880.00	-10.91000	-0.0058	PASSED
20	1880.00	-19.24000	-0.0102	PASSED
10	1880.00	-6.59000	-0.0035	PASSED
0	1880.00	-12.66000	-0.0067	PASSED
-10	1880.00	-11.17000	-0.0059	PASSED
-20	1880.00	-16.40000	-0.0087	PASSED
-30	1880.00	-7.43000	-0.004	PASSED

3.4. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	836.60	-6.13000	-0.0073	PASSED
40	836.60	-9.88000	-0.0118	PASSED
30	836.60	-8.01000	-0.0096	PASSED
20	836.60	-8.78000	-0.0105	PASSED
10	836.60	-4.26000	-0.0051	PASSED
0	836.60	-13.82000	-0.0165	PASSED
-10	836.60	-12.59000	-0.015	PASSED
-20	836.60	-5.36000	-0.0064	PASSED
-30	836.60	-8.20000	-0.0098	PASSED

3.5. LTE1700 (Band 4) Test results

FDD, CBW 20MHz, ,INV, INV RB, Channel 20175 / 1732.5 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1732.50	-1.00000	-0.0006	PASSED
40	1732.50	-1.00000	-0.0006	PASSED
30	1732.50	-1.00000	-0.0006	PASSED
20	1732.50	-1.00000	-0.0006	PASSED
10	1732.50	-1.00000	-0.0006	PASSED
0	1732.50	-1.00000	-0.0006	PASSED
-10	1732.50	-1.00000	-0.0006	PASSED
-20	1732.50	-1.00000	-0.0006	PASSED
-30	1732.50	-1.00000	-0.0006	PASSED

3.6. LTE700 Upper (Band 13) Test results

FDD, CBW 10MHz, ,INV, INV RB, Channel 23230 / 782.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	782.00	-1.00000	-0.0013	PASSED
40	782.00	-1.00000	-0.0013	PASSED

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30	782.00	-1.00000	-0.0013	PASSED
20	782.00	-1.00000	-0.0013	PASSED
10	782.00	-1.00000	-0.0013	PASSED
0	782.00	-1.00000	-0.0013	PASSED
-10	782.00	-1.00000	-0.0013	PASSED
-20	782.00	-1.00000	-0.0013	PASSED
-30	782.00	-1.00000	-0.0013	PASSED

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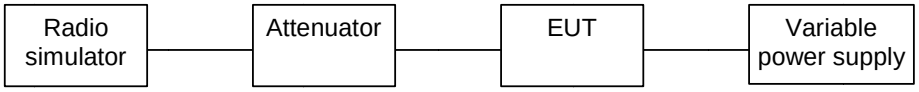
4. Frequency stability, voltage variation

(FCC §2.1055(d), RSS-132 4.3, RSS-133 6.3, RSS-139 6.3)

EUT with DUT number	RM-927, DUT 30738
Accessories with DUT numbers	SD-217R, DUT 30742
Operation Voltage [V] / [Hz]	3.6-4.2V DC
Results	PASSED
Remarks	
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 49 / 1050
Date of measurements	02-Aug-2013
Measured by	Feng You

4.1. Test Setup



4.2. Test method and limit

The measurement is made according to FCC rules parts 22, 24, 27 and IC standard RSS-132, RSS-133 and RSS-139
as follows:

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at the battery cut-off point.
Limits for frequency stability, voltage variation measurements

Frequency deviation [ppm]
+\- 2.5

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4.3. GSM 1900 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1880.00	-13.30000	-0.0071	PASSED
Nominal / 3.8	1880.00	-6.39000	-0.0034	PASSED
Battery cut-off point / 3.6	1880.00	-21.57000	-0.0115	PASSED

4.4. GSM 850 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	836.60	-13.11000	-0.0157	PASSED
Nominal / 3.8	836.60	-11.17000	-0.0134	PASSED
Battery cut-off point / 3.6	836.60	-4.97000	-0.0059	PASSED

4.5. LTE1700 (Band 4) Test results

FDD, CBW 20MHz, ,INV, INV RB, Channel 20175 / 1732.5 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1732.50	-1.00000	-0.0006	PASSED
Nominal / 3.8	1732.50	-1.00000	-0.0006	PASSED
Battery cut-off point / 3.6	1732.50	-1.00000	-0.0006	PASSED

4.6. LTE700 Upper (Band 13) Test results

FDD, CBW 10MHz, ,INV, INV RB, Channel 23230 / 782.0 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	782.00	-1.00000	-0.0013	PASSED
Nominal / 3.8	782.00	-1.00000	-0.0013	PASSED
Battery cut-off point / 3.6	782.00	-1.00000	-0.0013	PASSED

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5. Test Equipment

5.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
4406	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
7602	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
7151	Bluetooth Tester	CBT	R&S	15B
-	GPS RX Antenna w/AMP	L1A-PM-NF	GPS Source	15C
-	GPS Inline amplifier	A11M-V-NF-NM	GPS Source	15C
-	GPS signal Splitter	S12-P110/5-NF	GPS Source	15C
-	GPS TX Antenna	L1P-PV-NF	GPS Source	15C
7912	Spectrum Analyzer	FSV-30	R&S	22/24/27, 15C
-	Thermal Chamber	VT-4002	Vötsch	22/24/27, 15C
-	Power splitter	11667B	Agilent	22/24/27, 15C
3396	EMC Analyzer	E7405A	HP	-
7451	EMI Receiver	ESU-26	R&S	22/24/27, 15C, 15B
4188	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
6981	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
-	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
7582	Signal Generator	SMB100A	R&S	15C, 15B

5.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
7591	Antenna	HL562	R&S	22/24/27, 15C, 15B
7572	Double Ridge Horn Antenna	3117	ETS-Lindgren	22/24/27, 15C
7607	Standard Gain HornAntenna	SAS 586	A.H. System	22/24/27, 15C
7624	Standard Gain HornAntenna	SAS 587	A.H. System	22/24/27, 15C
7561	Antenna	HFH2-Z2	R&S	15C, 15B
5715	Antenna	MBA-3030	EMC Automation	22/24/27, 15C
5712	Antenna	PLP3003	EMC Automation	22/24/27, 15C
7457	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
7459	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
5729	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
5728	EMI Receiver	ESIB26	R&S	22/24/27, 15C, 15B
4406	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
7602	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
7151	Bluetooth Tester	CBT	R&S	15B
3406	Controller	Sc99V	Sunol	22/24/27, 15C, 15B
-	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
-	Computer Controller	GS-232B	Yaesu	22/24/27, 15C, 15B
7040	Preamplifier	TS-PR3	R&S	22/24/27, 15C, 15B
-	Preamplifier	AMF-6D-020180-29-20P	Miteq	22/24/27, 15C, 15B
-	Preamplifier	AMF-4D-01000800-30-29P	Miteq	22/24/27, 15C, 15B
-	Preamplifier	AMF-5F-18002650-25-10P	Miteq	22/24/27, 15C, 15B
-	High Pass Filter	4HC1700-1-KK	R&S	22
-	High Pass Filter	F-15041	RLC	22/24/27, 15C
-	Band Reject Filter	WRCA824/849-0,2-6SS	Wainwright	22
-	Band Reject Filter	WRCC1800/2000-0.2-10SS	Wainwright	24
-	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
-	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22
-	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27

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Eq. No	Equipment	Type	Manufacturer	Used in
-	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
-	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
-	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	-
Planned	Notch Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27
-	GPS RX Antenna w/AMP	L1A-PM-NF	GPS Source	15C
-	GPS Inline amplifier	A11M-V-NF-NM	GPS Source	15C
-	GPS signal Splitter	S12-P110/5-NF	GPS Source	15C
-	GPS TX Antenna	L1P-PV-NF	GPS Source	15C

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