Product Service

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Report On

FCC Testing of the Sharp SHL25 Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDD I, FDD V) & Quad-band LTE (B1, B3, B17, B18) & AXGP (TDD 41) multi mode cellular phone with Bluetooth, ANT+, WLAN, SRD (NFC, FeliCa) and GPS on accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22 (WCDMA FDD V)

COMMERCIAL-IN-CONFIDENCE
FCC ID: APYHRO00206

Document 75925936 Report 15 Issue 1 May 2014

Product Service

TÜV SÜD Product Service, Octagon House, Concorde Way, Segensworth North,
Fareham, Hampshire, United Kingdom, PO15 5RL
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COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC Testing of the Sharp SHL25 Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDD I, FDD V) & Quad-band LTE (B1, B3, B17, B18) & AXGP (TDD 41) multi mode cellular phone with Bluetooth, ANT+, WLAN, SRD (NFC, FeliCa) and GPS in accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22 (WCDMA FDD V)

Document 75925936 Report 15 Issue 1

May 2014

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DATED 13 May 2014

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

T Guy S Milliken M Russell J Tuckwell

UKAS TESTING 0141

COMMERCIAL-IN-CONFIDENCE

Product Service

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Product Service

SECTION 1

REPORT SUMMARY

FCC Testing of the
Sharp SHL25 Dual-band CDMA (BC0, BC6) & Quad-band GSM
(GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDD I, FDD V) & Quad-band LTE
(B1, B3, B17, B18) & AXGP (TDD 41) multi mode cellular phone with Bluetooth, ANT+, WLAN,
SRD (NFC, FeliCa) and GPS
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22 (WCDMA FDD V)

1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC Testing of the Sharp SHL25 Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDD I, FDD V) & Quad-band LTE (B1, B3, B17, B18) & AXGP (TDD 41) multi mode cellular phone with Bluetooth, ANT+, WLAN, SRD (NFC, FeliCa) and GPS to the requirements of FCC CFR 47 Part 2 and FCC CFR 47 Part 22.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Sharp Corporation
Model Number(s)	SHL25
Serial Number(s)	IMEI 004401115170660 IMEI 004401115170215
Number of Samples Tested	2
Test Specification/Issue/Date	FCC CFR 47 Part 2 (2013) FCC CFR 47 Part 22 (2013)
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	10070 10 March 2014
Start of Test	3 April 2014
Finish of Test	19 April 2014
Name of Engineer(s)	T Guy S Milliken M Russell J Tuckwell
Related Document(s)	ANSI C63.4: 2009

Product Service

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22 is shown below.

Section	Spec Clause		Test Description	Result	Comments/Base Standard
	Pt 2	Pt 22			
WCDMA FDD V					
2.1	2.1051	22.905	Spurious Emissions at Band Edge	Pass	
2.2	-	22.913 (a)	Effective Radiated Power	Pass	
2.3	2.1046	22.913 (a)	Maximum Peak Output Power - Conducted	Pass	
2.4	-	22.917	Emission Limitations for Cellular Equipment	Pass	
2.5	2.1051	22.917 (a)	Conducted Spurious Emissions	Pass	
2.6	2.1049 (h)	22.917 (b)	Occupied Bandwidth	Pass	
2.7	2.1047 (d)	-	Modulation Characteristics	-	Customer Declaration
2.8	2.1055	22.355	Frequency Stability	Pass	

1.3 PRODUCT TECHNICAL DESCRIPTION

Please refer to the SHL25 Model Description Form.

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Sharp SHL25 Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDD I, FDD V) & Quad-band LTE (B1, B3, B17, B18) & AXGP (TDD 41) multi mode cellular phone with Bluetooth, ANT+, WLAN, SRD (NFC, FeliCa) and GPS. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 4.0 V DC supply.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.

Product Service

SECTION 2

TEST DETAILS

FCC Testing of the
Sharp SHL25 Dual-band CDMA (BC0, BC6) & Quad-band GSM
(GSM850/GSM900/DCS1800/PCS1900) & Dual-band UMTS (FDD I, FDD V) & Quad-band LTE
(B1, B3, B17, B18) & AXGP (TDD 41) multi mode cellular phone with Bluetooth, ANT+, WLAN,
SRD (NFC, FeliCa) and GPS
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 22 (WCDMA FDD V)

2.1 SPURIOUS EMISSIONS AT BAND EDGE

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 22, Clause 22.905

2.1.2 Equipment Under Test and Modification State

SHL25 S/N: IMEI 004401115170660 - Modification State 0

2.1.3 Date of Test

10 April 2014

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

The test was applied in accordance with the requirements of FCC CFR 47 Part 22.905 in conjunction with the test methods described in document 971168 D01 Power Meas License Digital Systems v02r01.

The EUT was configured in a WCDMA packet domain data link using QPSK modulation at maximum output power using a communications test set. The EUT was connected to a spectrum analyser via a cable, combiner and attenuator. The path loss was entered as a reference level offset. A spectrum analyser was used to perform the measurements with resolution and video bandwidths settings of 100 kHz and 300 kHz respectively, using an RMS detector and max hold trace. A sufficient number of sweeps were allowed for the trace to stabilise before measuring the greatest emission within 1 MHz adjacent to the authorised bandwidth edge. This test sequence was repeated to measure the emissions adjacent to the bottom and top edges of the authorised bandwidth.

2.1.6 Environmental Conditions

Ambient Temperature	24.5°C
Relative Humidity	26.0%

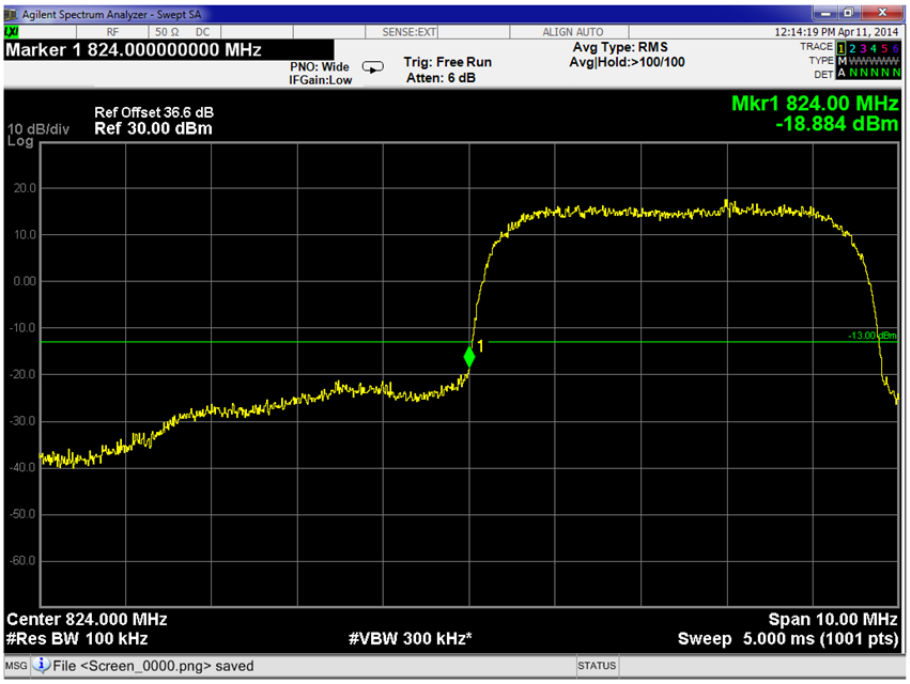
Product Service

2.1.7 Test Results

4.0 V DC Supply

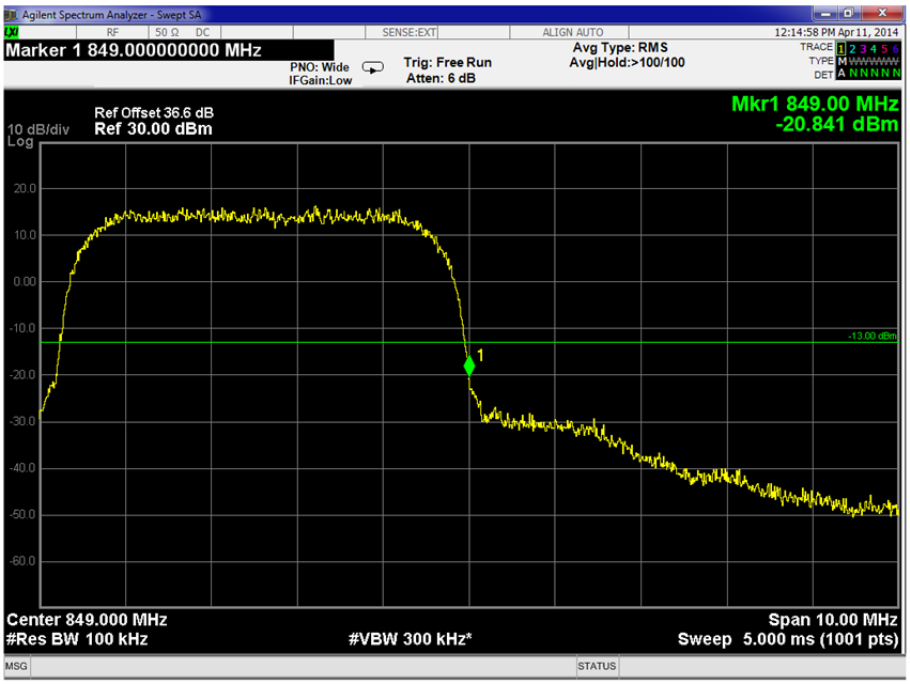
Frequency Block (MHz)	Mode	Lower Block Edge Test Channels/Frequencies	Upper Block Edge Test Channels/Frequencies
A :(824.0 – 835.0)	WCDMA	Channel : 4132 Frequency : 826.4 MHz	N/A
B :(846.5 – 849.0)	WCDMA	N/A	Channel : 4233 Frequency : 846.6MHz

Frequency Block A



Product Service

Frequency Block B



Limit Clause

-13 dBm at block edge.

2.2 EFFECTIVE RADIATED POWER

2.2.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.913 (a)

2.2.2 Equipment Under Test and Modification State

SHL25 S/N: IMEI 004401115170215 - Modification State 0

2.2.3 Date of Test

11 April 2014

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

Measurements of the fundamental from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The fundamental frequency was maximised by adjusting the antenna height, antenna polarisation and turntable azimuth. A peak detector was used with the trace set to max hold. The maximum result was recorded.

The EUT was then removed from the chamber and replaced with a substitution antenna. Using a signal generator the level was adjusted to achieve the same value on the measuring instrument as previously recorded with the EUT. The final result (ERP) was determined by a calculation using the signal generator level, antenna gain and cable loss.

The measurements were performed at a 3m distance unless otherwise stated.

2.2.6 Environmental Conditions

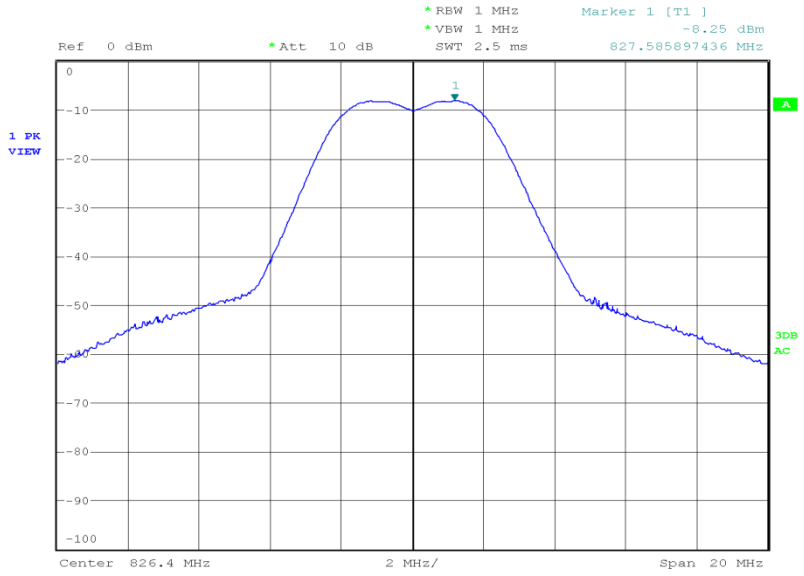
Ambient Temperature	21.6°C
Relative Humidity	32.0%

Product Service

2.2.7 Test Results

826.60 MHz

Result (dBm)	Result (W)
28.95	0.785



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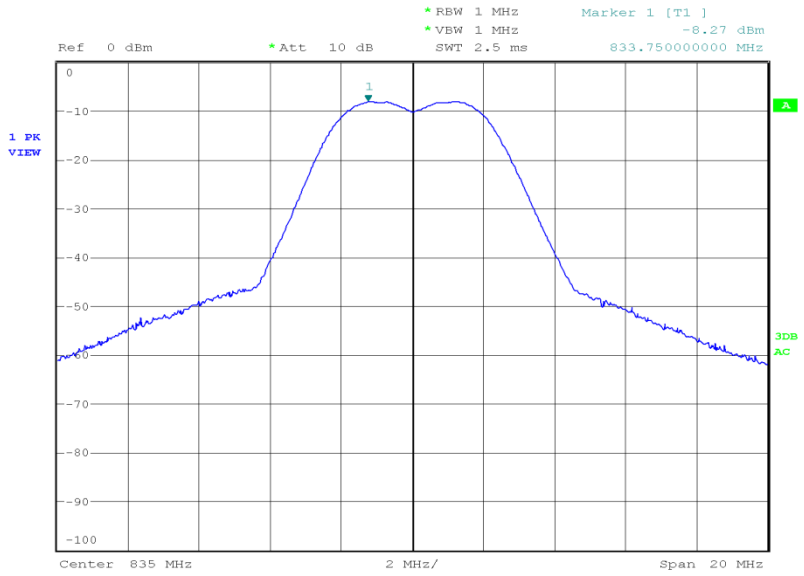
Product Service

835.00 MHz

Result (dBm)	Result (W)
28.87	0.771

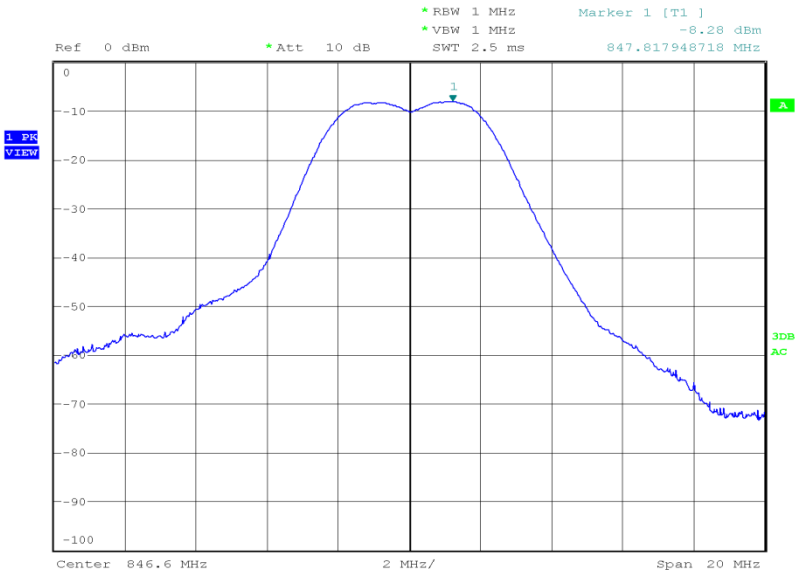


Date: 11.APR.2014 10:45:31

Product Service

846.40 MHz

Result (dBm)	Result (W)
29.06	0.805



Date: 11.APR.2014 10:33:07

Limit Clause

Mobile – 7 W or 38.45 dBm

2.3 MAXIMUM PEAK OUTPUT POWER - CONDUCTED

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 22, Clause 22.913 (a)

2.3.2 Equipment Under Test and Modification State

SHL25 S/N: IMEI 004401115170660 - Modification State 0

2.3.3 Date of Test

3 April 2014

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Procedure

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 22.913 (a), FCC CFR 47 Part 2.1046 and KDB 971168.

The EUT was configured as WCDMA with 12.2kbps RMC connection at maximum output power on bottom, middle or top channel using a communications test set. The EUT was connected to a wideband peak power meter via a cable, combiner and attenuator. The path loss was entered as an offset on the power meter and the result was recorded.

2.3.6 Environmental Conditions

Ambient Temperature	25.6°C
Relative Humidity	37.0%

2.3.7 Test Results

4.0 V DC Supply

826.60 MHz

Mode	Result (dBm)	Result (W)
WCDMA	26.37	0.43

835.00 MHz

Mode	Result (dBm)	Result (W)
WCDMA	26.03	0.40

846.40 MHz

Mode	Result (dBm)	Result (W)
WCDMA	27.45	0.56

Limit Clause

Mobile – 7 W or 38.45 dBm

2.4 EMISSION LIMITATIONS FOR CELLULAR EQUIPMENT

2.4.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.917

2.4.2 Equipment Under Test and Modification State

SHL25 S/N: IMEI 004401115170215 - Modification State 0

2.4.3 Date of Test

11 April 2014

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Procedure

A preliminary profile of the Spurious Radiated Emissions was obtained up to the 10th harmonic by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT, the list of emissions was then confirmed or updated under Alternative Open Site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

The EUT was set to transmit on maximum power with modulation on the bottom, middle and top channels.

For any emissions found the EUT was then removed from the chamber and replaced with a substitution antenna. Using a signal generator the level was adjusted to achieve the same value on the measuring instrument as previously recorded with the EUT. The final result was determined by a calculation using the signal generator level, antenna gain and cable loss.

The measurements were performed at a 3m distance unless otherwise stated.

2.4.6 Environmental Conditions

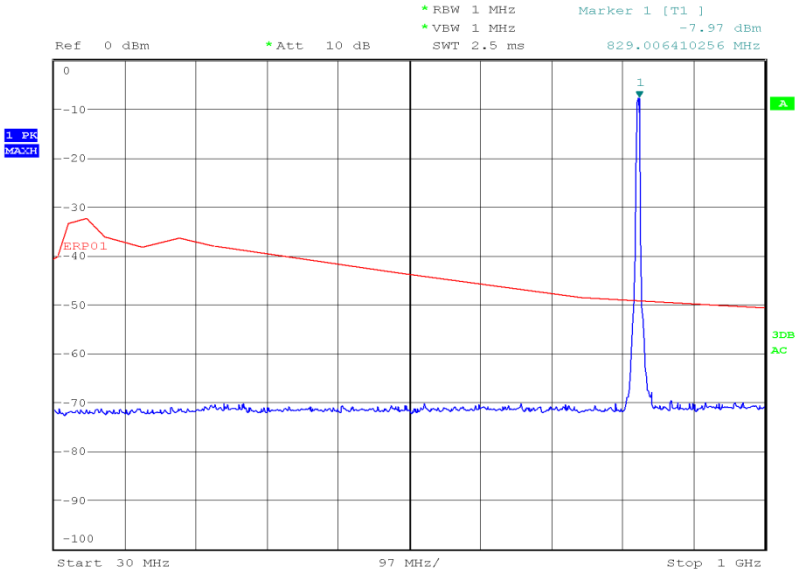
Ambient Temperature	21.6°C
Relative Humidity	32.0%

Product Service

2.4.7 Test Results

826.60 MHz

30 MHz to 1 GHz



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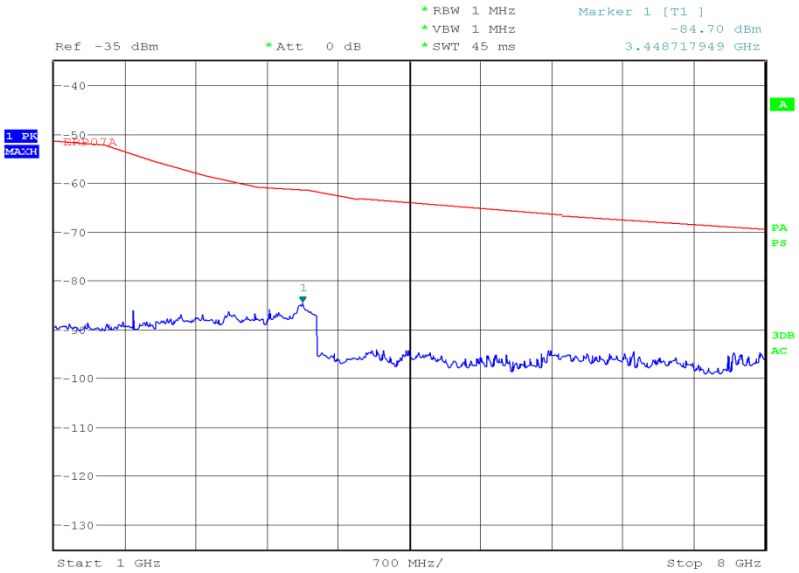
1 GHz to 8 GHz



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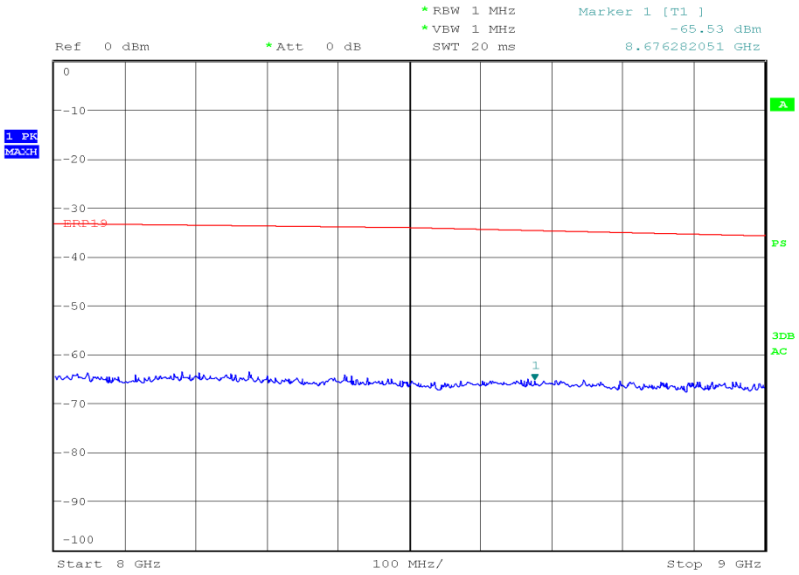
Product Service

8 GHz to 9 GHz



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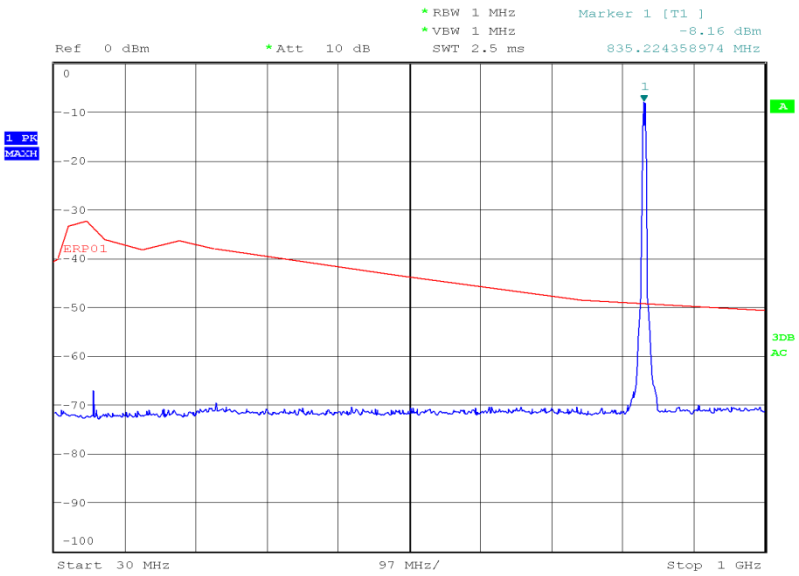
Product Service

835.00 MHz

30 MHz to 1 GHz



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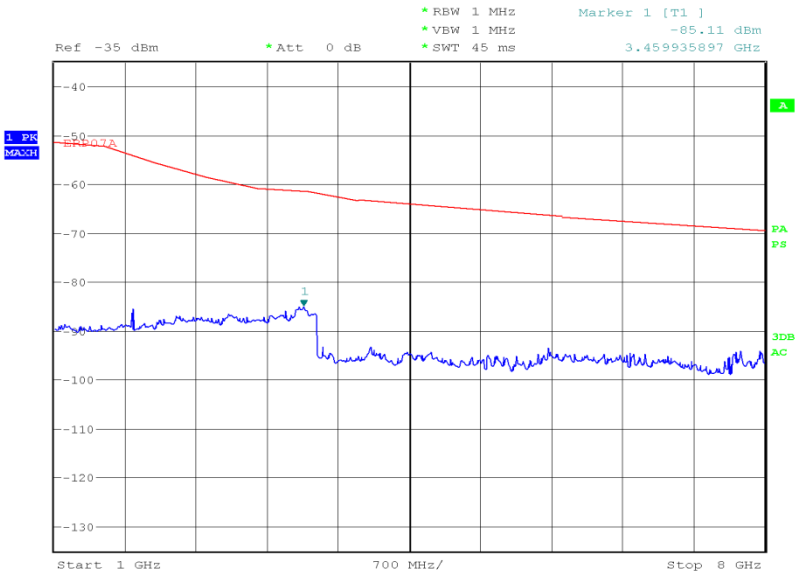
1 GHz to 8 GHz



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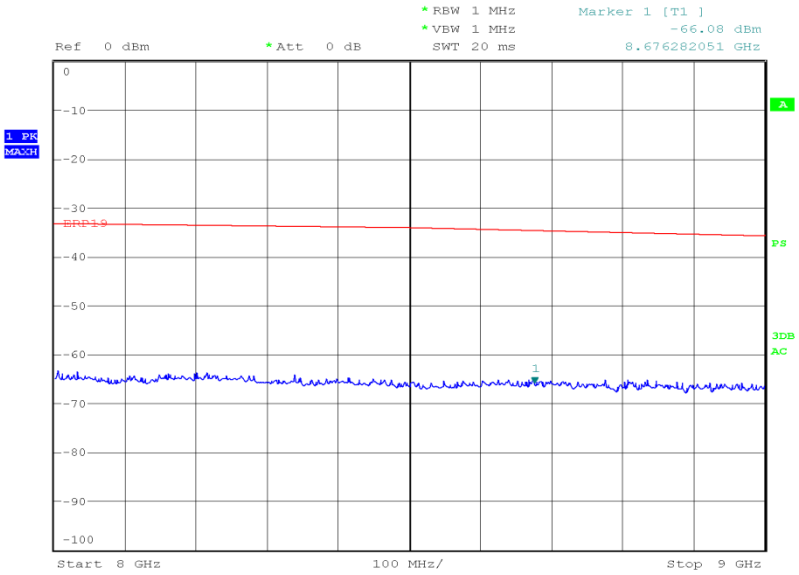
Product Service

8 GHz to 9 GHz



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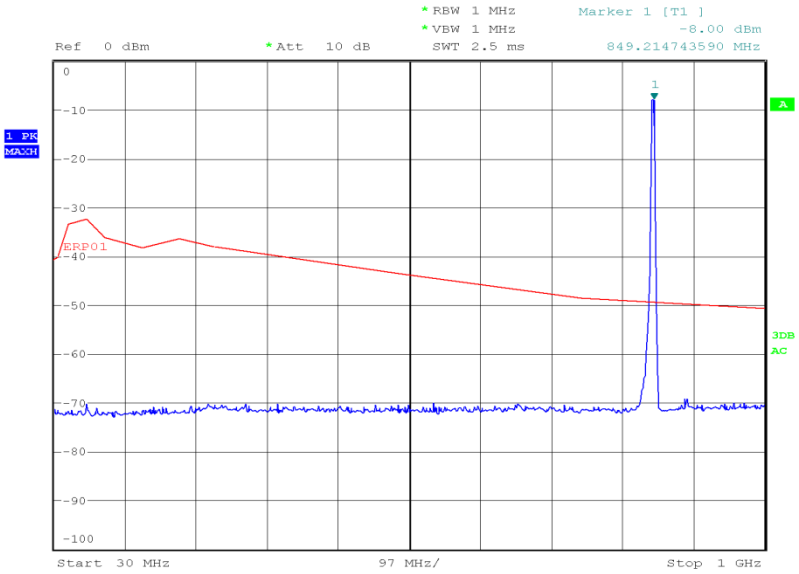
Product Service

846.40 MHz

30 MHz to 1 GHz



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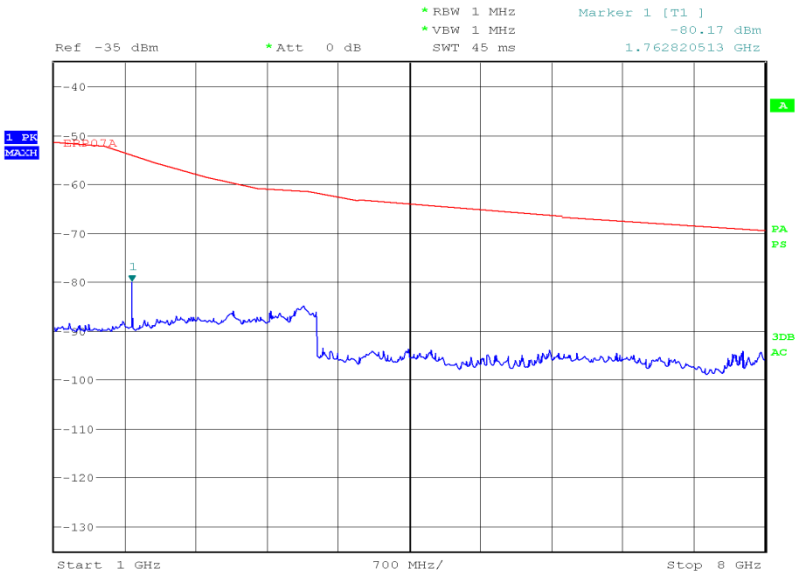
1 GHz to 8 GHz



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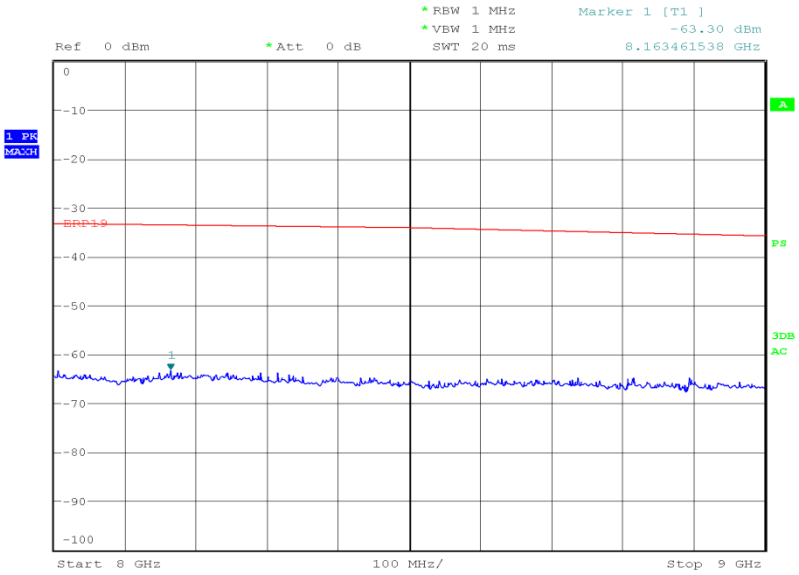
Product Service

8 GHz to 9 GHz



Limit Clause

43+10log(P) or -13 dBm

2.5 CONDUCTED SPURIOUS EMISSIONS

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 22, Clause 22.917 (a)

2.5.2 Equipment Under Test and Modification State

SHL25 S/N: IMEI 004401115170660 - Modification State 0

2.5.3 Date of Test

10 April 2014

2.5.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.5 Test Procedure

The test was applied in accordance with the requirements of FCC CFR 47 Part 22.917 in conjunction with the test methods described in document 971168 D01 Power Meas License Digital Systems v02r01.

The EUT was configured in a WCDMA packet domain data link using QPSK modulation at maximum output power using a communications test set via a combiner and a 10 dB attenuator.

A spectrum analyser was used to perform the measurements with resolution and video bandwidths settings of 1 MHz and 3 MHz respectively, using a peak detector and max hold trace. A sufficient number of sweeps were allowed for the trace to stabilise before measuring the greatest emission with a peak marker. This test sequence was repeated to measure the greatest peak emissions when operating the EUT on the bottom, middle and top operating channel within the authorised band.

From 9 kHz to 1.5 GHz, a 30 dB attenuator was used. For measuring in the range 1.5 GHz to 9 GHz a 10 dB attenuator and 1.5 GHz high pass filter were used. This was to reduce saturation effects in the spectrum analyser.

The maximum path loss across the measurement bands were used as reference level offsets to ensure worst case.

2.5.6 Environmental Conditions

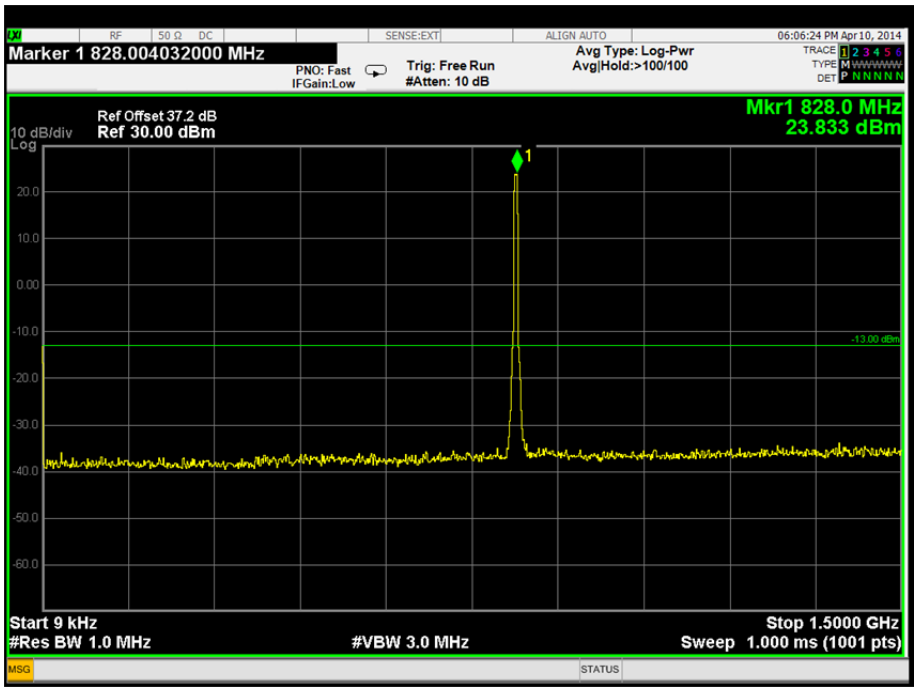
Ambient Temperature	24.5°C
Relative Humidity	26.0%

Product Service

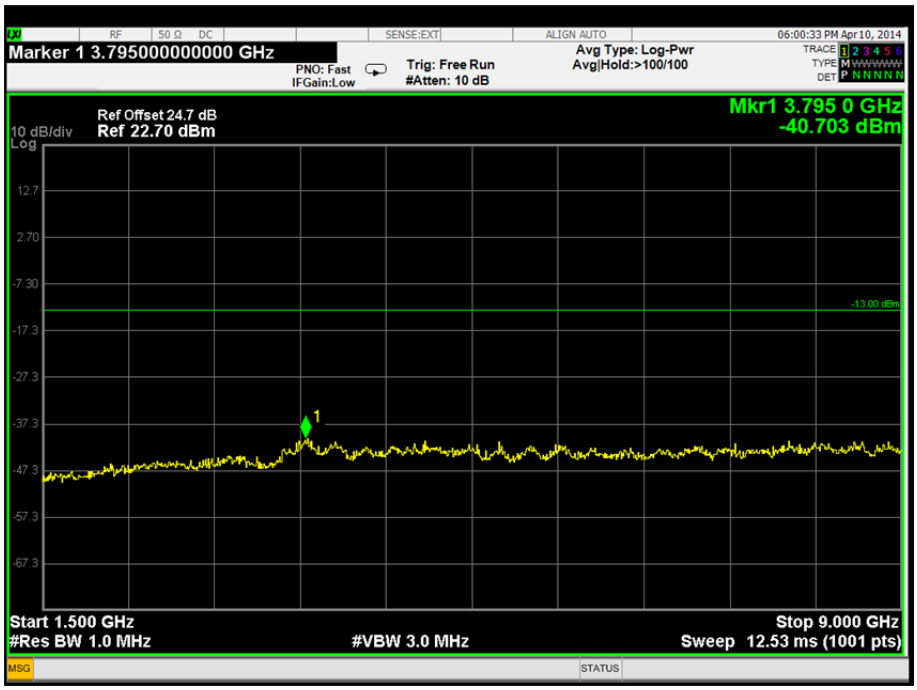
2.5.7 Test Results

826.60 MHz

9 kHz to 1.5 GHz



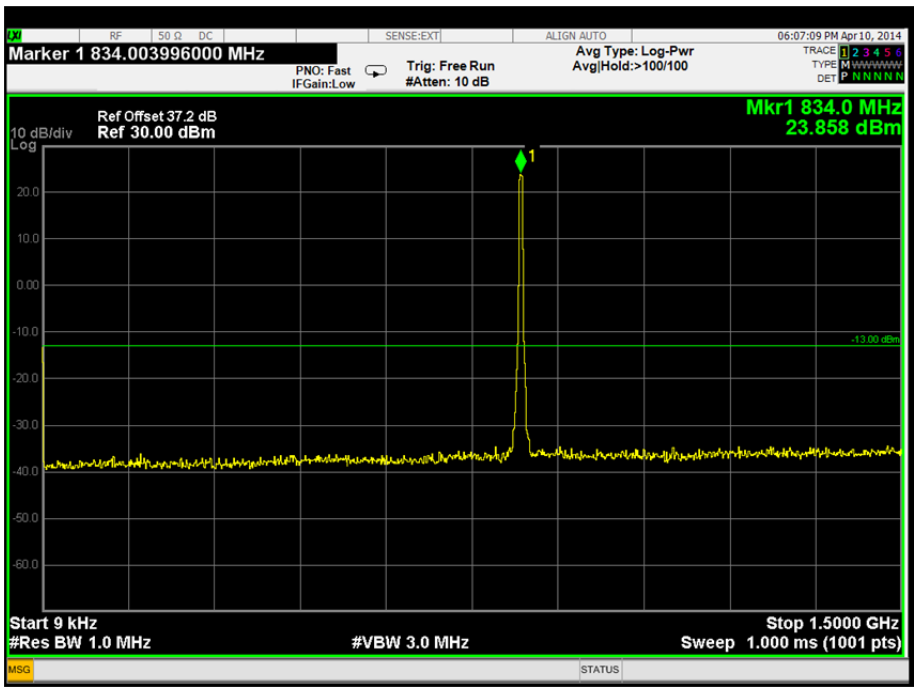
1.5 GHz to 9 GHz



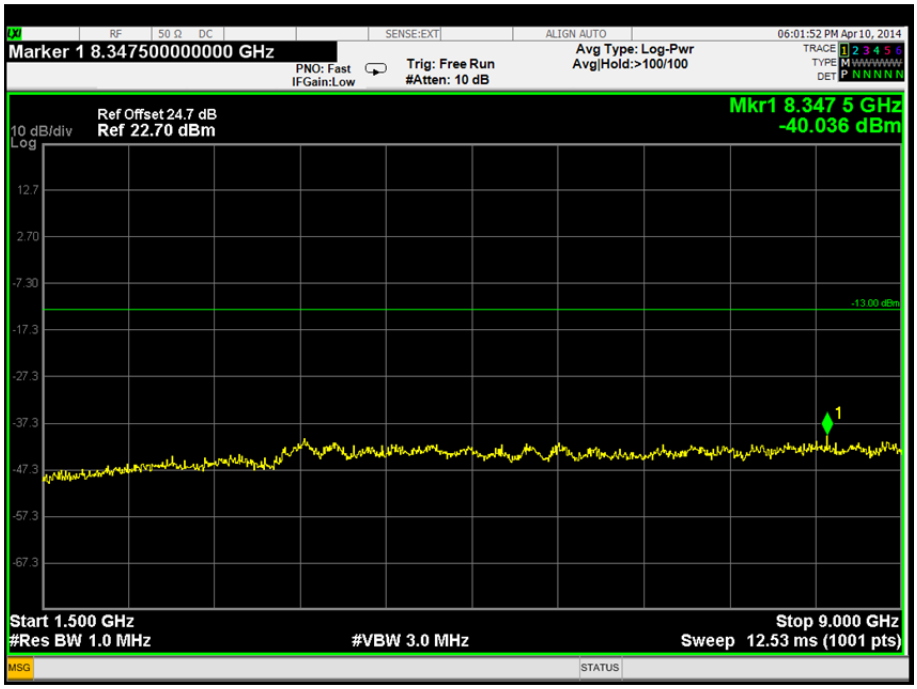
Product Service

835.00 MHz

9 kHz to 1.5 GHz



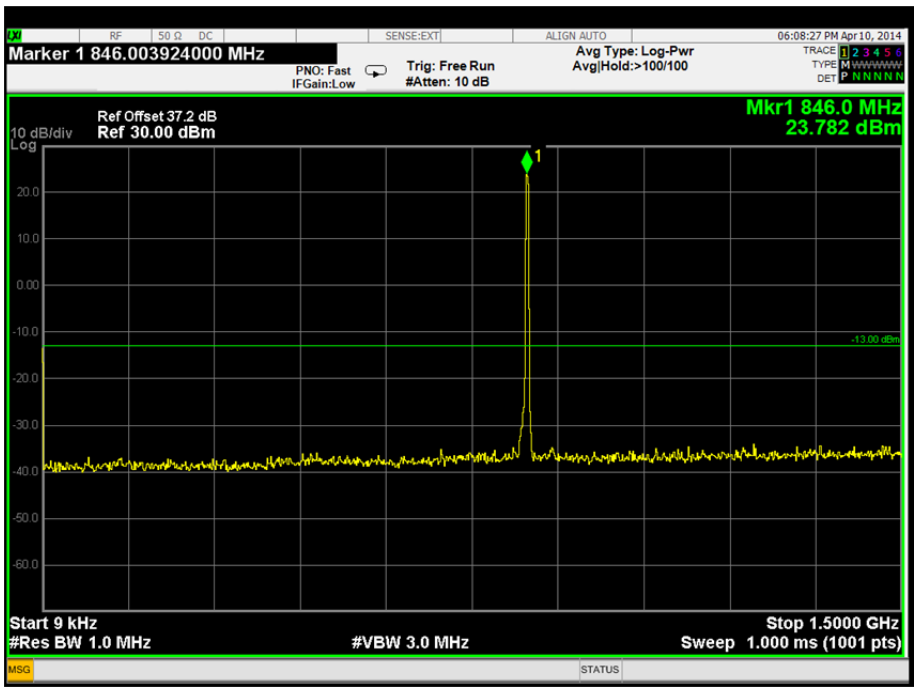
1.5 GHz to 9 GHz



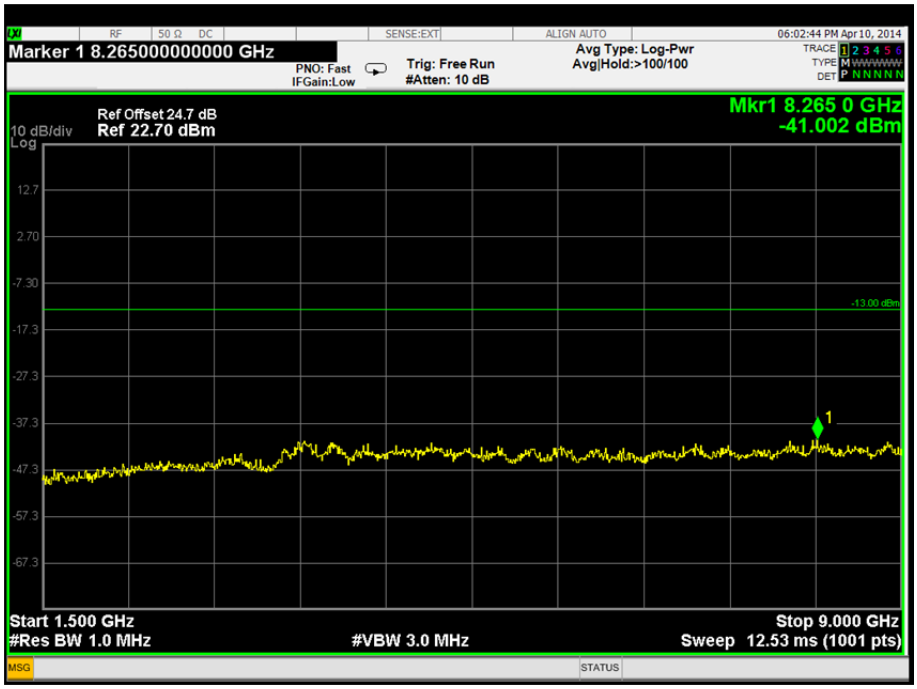
Product Service

846.40 MHz

9 kHz to 1.5 GHz



1.5 GHz to 9 GHz



Limit Clause

43+10log(P) or -13 dBm

2.6 OCCUPIED BANDWIDTH

2.6.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049 (h)
FCC CFR 47 Part 22, Clause 22.917 (b)

2.6.2 Equipment Under Test and Modification State

SHL25 S/N: IMEI 004401115170660 - Modification State 0

2.6.3 Date of Test

4 April 2014

2.6.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.5 Test Procedure

The test was applied in accordance with the requirements of FCC CFR 47 Part 22.917 (b) in conjunction with the test methods described in document 971168 D01 Power Meas License Digital Systems v02r01.

The EUT was configured in a WCDMA packet domain data link using QPSK modulation at maximum output power using a communications test set. The EUT was connected to a spectrum analyser via a cable, combiner and attenuator. The path loss was entered as a reference level offset. A spectrum analyser was used to perform the measurements with resolution and video bandwidths settings of 100 kHz and 300 kHz respectively, using a peak detector and max hold trace. A sufficient number of sweeps were allowed for the trace to stabilise and using an occupied bandwidth measurement function of the spectrum analyser; the 26 dB bandwidth was recorded. This test sequence was repeated to measure the 26 dB bandwidths of the bottom, middle and top operating channel within the authorised band.

2.6.6 Environmental Conditions

Ambient Temperature	23.7°C
Relative Humidity	35.2%

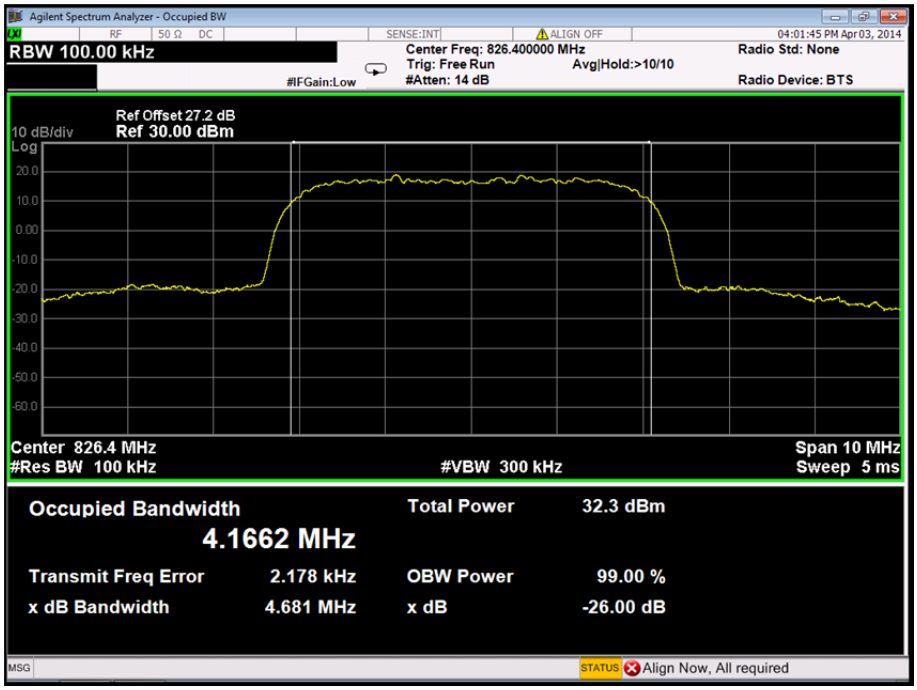
Product Service

2.6.7 Test Results

4.0 V DC Supply

826.60 MHz

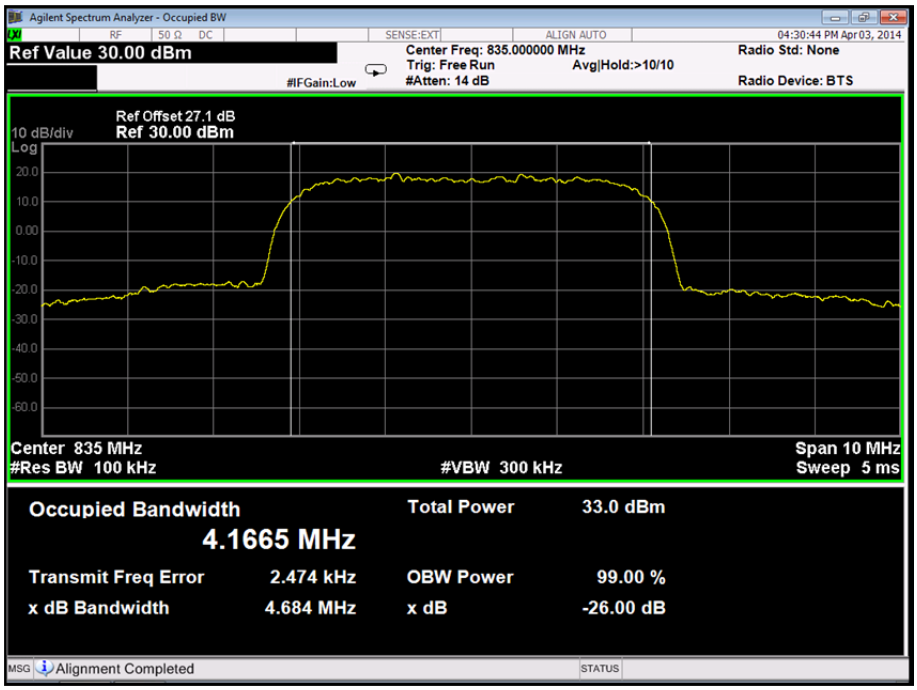
Mode	Occupied Bandwidth (kHz)
WCDMA	4681



Product Service

835.00 MHz

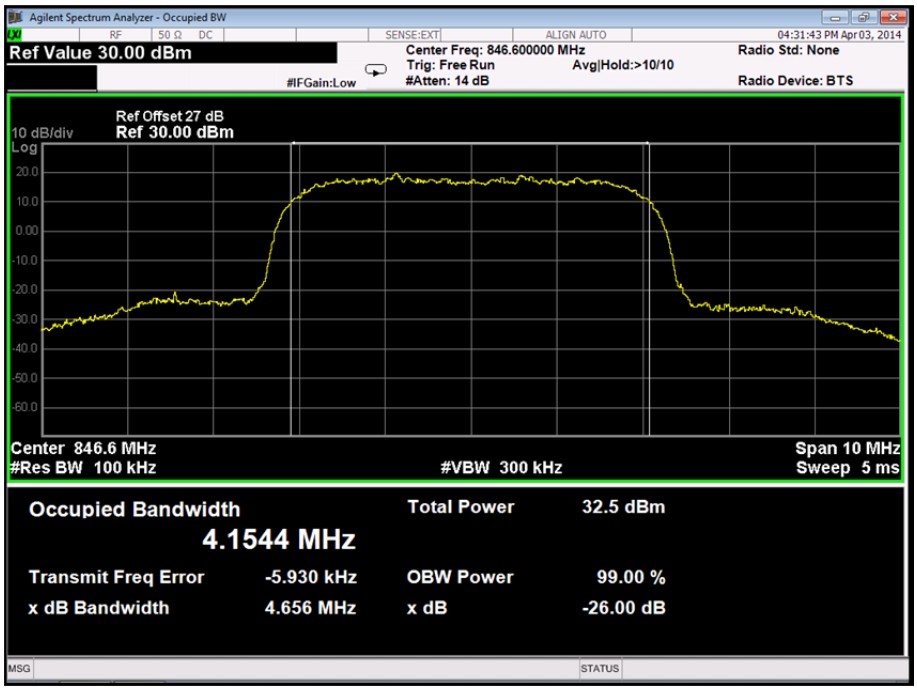
Mode	Occupied Bandwidth (kHz)
WCDMA	4684



Product Service

846.40 MHz

Mode	Occupied Bandwidth (kHz)
WCDMA	4656



Limit Clause

The occupied bandwidth, that is the frequency bandwidth such that, below is lower and above is upper frequency limits, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.

Product Service

2.7 MODULATION CHARACTERISTICS

2.7.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1047 (d)

2.7.2 Equipment Under Test

SHL25

2.7.3 Test Results

Customer Description

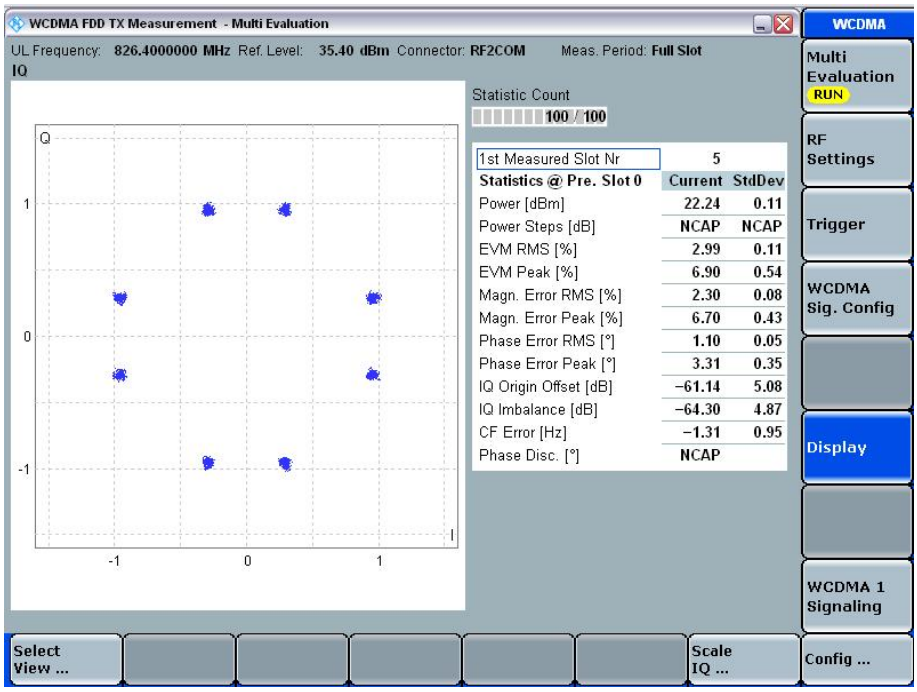
For the period of test the EUT met the requirements of FCC CFR 47 Part 2 for Modulation Characteristics.

The test results are shown below.

4.0 V DC Supply

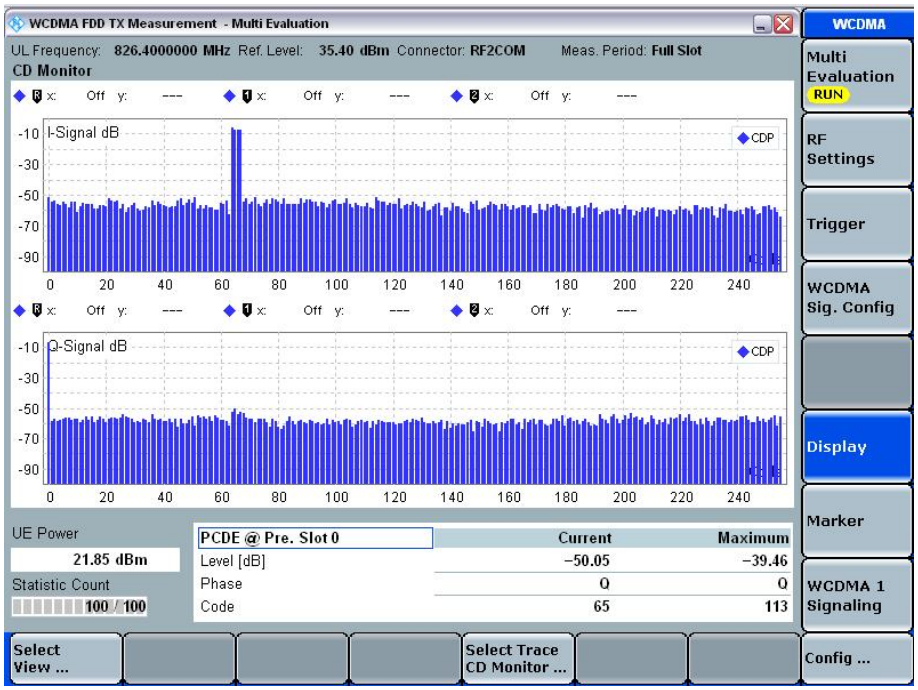
QPSK

Constellation Diagram

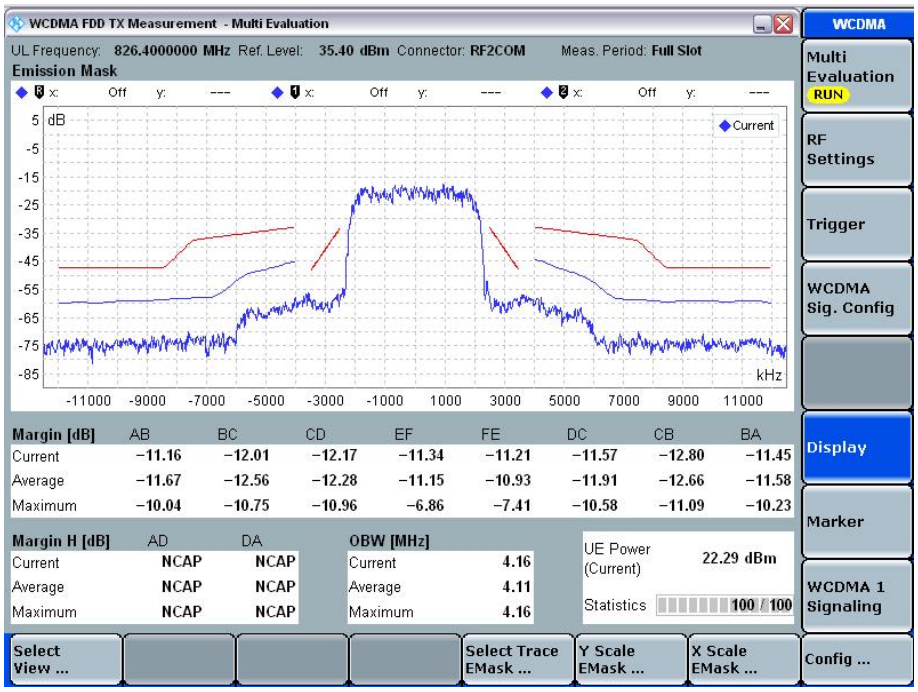


Product Service

I and Q Code Domain



Spectrum Emission Mask



Limit Clause

A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

2.8 FREQUENCY STABILITY

2.8.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1055
FCC CFR 47 Part 22, Clause 22.355

2.8.2 Equipment Under Test and Modification State

SHL25 S/N: IMEI 004401115170660 - Modification State 0

2.8.3 Date of Test

16 April 2014

2.8.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.5 Test Procedure

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 22.315 and FCC CFR 47 Part 2.1055.

The EUT was configured in a WCDMA packet domain data link using QPSK modulation at maximum output power on the middle channel using a communications test set. The communications test set was connected to an external 10 MHz rubidium frequency standard to increase accuracy of the measurement. The Tx measurement function of the communications tester was then used and the maximum frequency error was then recorded.

Measurements were repeated over the temperature range of +50^{0}C to -30^{0}C in 10^{0}C steps and at +20^{0}C the voltage was varied to the maximum and minimum end point voltages as declared by the manufacturer.

2.8.6 Environmental Conditions

Ambient Temperature	22.0°C
Relative Humidity	29.4%

2.8.7 Test Results

Temperature Interval (ºC)	Mode	Modulation	Deviation (ppm)
-30	WCDMA	QPSK	0.005
-20	WCDMA	QPSK	-0.006
-10	WCDMA	QPSK	-0.006
0	WCDMA	QPSK	-0.007
+10	WCDMA	QPSK	-0.006
+20	WCDMA	QPSK	-0.004
+30	WCDMA	QPSK	0.006
+40	WCDMA	QPSK	0.007
+50	WCDMA	QPSK	0.007

Limit Clause

Frequency Range (MHz)	Base, Fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20	20	50
50 to 450	5	5	50
450 to 512	2.5	5	5
821 to 896	1.5	2.5	2.5
928 to 929	5.0	-	-
929 to 960	1.5	-	-
2110 to 2220	10	-	-

Product Service

Under Voltage Variations

835.00 MHz

DC Voltage (V)	Mode	Modulation	Deviation (ppm)
4.0 V DC	WCDMA	QPSK	-0.004
3.7 V DC	WCDMA	QPSK	-0.004
4.0 V DC	WCDMA	QPSK	-0.004

Limit Clause

Frequency Range (MHz)	Base, Fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20	20	50
50 to 450	5	5	50
450 to 512	2.5	5	5
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10	n/a	n/a

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 - Spurious Emissions at Band Edge					
Attenuator (10dB)	Weinschel	47-10-34	481	12	28-Mar-2015
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	12	25-Oct-2014
Multimeter	Fluke	79 Series II	3057	12	24-Sep-2014
Attenuator (30dB/50W)	Aeroflex / Weinschel	47-30-34	3164	12	12-Dec-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
Combiner/Splitter	Weinschel	1506A	3878	12	21-Mar-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014
PXA Signal Analyser	Agilent Technologies	N9030A PXA	4409	12	27-Feb-2015
Section 2.2 - Effective Radiated Power					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	3-May-2014
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	8-Nov-2014
Communications Tester	Rohde & Schwarz	CMU 200	442	12	8-Nov-2014
Filter (High Pass)	Lorch	SHP7-7000-SR	566	12	24-Feb-2015
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	1002	12	18-Sep-2014
Pre-Amplifier	Phase One	PSO4-0087	1534	12	30-Sep-2014
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
GSM Test Set	Rohde & Schwarz	CMU 200	2809	12	18-Jun-2014
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
Antenna (Log Periodic)	Schaffner	UPA6108	3108	12	15-May-2014
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	4143	12	22-Jul-2014
Section 2.3 - Maximum Peak Output Power - Conducted					
Multimeter	White Gold	WG022	190	12	28-Oct-2014
Communications Tester	Rohde & Schwarz	CMU 200	442	12	8-Nov-2014
Attenuator (20dB/ 2W)	Pasternack	PE7004-20	489	12	30-Oct-2014
Power Divider	Weinschel	1506A	604	12	23-May-2014
Power Supply Unit	Farnell	TSV-70	2043	-	O/P Mon
Hygrometer	Rotronic	I-1000	3220	12	16-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	18-Sep-2014
50 MHz-18 GHz Wideband Power Sensor	Agilent Technologies	N1921A	3983	12	18-Sep-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014

Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.4 - Emission Limitations for Cellular Equipment					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	3-May-2014
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	1002	12	18-Sep-2014
Pre-Amplifier	Phase One	PS04-0086	1533	12	19-Dec-2014
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	4143	12	22-Jul-2014
Suspended Substrate Highpass Filter	Advance Power Components	11SH10-3000/X18000-O/O	4412	12	21-Mar-2015
Section 2.5 - Conducted Spurious Emissions					
Attenuator (10dB)	Weinschel	47-10-34	481	12	28-Mar-2015
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Filter	Daden Anthony Ass	MH-1500-7SS	2778	12	04-Feb-2015
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	12	25-Oct-2014
Multimeter	Fluke	79 Series II	3057	12	24-Sep-2014
Attenuator (30dB/50W)	Aeroflex / Weinschel	47-30-34	3164	12	12-Dec-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
Combiner/Splitter	Weinschel	1506A	3878	12	21-Mar-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014
PXA Signal Analyser	Agilent Technologies	N9030A PXA	4409	12	27-Feb-2015
Section 2.6 - Occupied Bandwidth					
Multimeter	White Gold	WG022	190	12	28-Oct-2014
Communications Tester	Rohde & Schwarz	CMU 200	442	12	8-Nov-2014
Attenuator (10dB)	Weinschel	47-10-34	481	12	28-Mar-2015
Attenuator (20dB/ 2W)	Pasternack	PE7004-20	489	12	30-Oct-2014
Power Divider	Weinschel	1506A	604	12	23-May-2014
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Power Supply Unit	Farnell	TSV-70	2043	-	O/P Mon
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	12	25-Oct-2014
Multimeter	Fluke	79 Series II	3057	12	24-Sep-2014
Attenuator (30dB/50W)	Aeroflex / Weinschel	47-30-34	3164	12	12-Dec-2014
Hygrometer	Rotronic	I-1000	3220	12	16-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
Combiner/Splitter	Weinschel	1506A	3878	12	21-Mar-2015
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014
PXA Signal Analyser	Agilent Technologies	N9030A PXA	4409	12	27-Feb-2015

Product Service

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.8 - Frequency Stability					
Multimeter	White Gold	WG022	190	12	28-Oct-2014
Digital Temperature Indicator + T/C	Fluke	51	412	12	12-Feb-2015
Power Supply Unit	Hewlett Packard	6253A	441	-	O/P Mon
Temperature Chamber	Montford	2F3	467	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Attenuator (20dB, 2W)	Pasternack	PE7004-20	2943	12	28-Mar-2015
DC - 12.4 GHz 10 dB Attenuator	Suhner	6810.17.A	3965	12	17-Oct-2014
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	4143	12	22-Jul-2014
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	4144	12	17-Jul-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014

TU – Traceability Unscheduled
O/P MON – Output Monitored with Calibrated Equipment

Product Service

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Modulation Characteristics	-
Frequency Stability	± 46.70 Hz
Maximum Peak Output Power - Conducted	± 0.70 dB
Conducted Spurious Emissions	± 3.454 dB
Emission Limitations for Cellular Equipment	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
Spurious Emissions at Band Edge	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
Occupied Bandwidth	± 16.74 kHz
Effective Radiated Power	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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