FCC&IC
RF Test Report

Product Name: Ascend P1;
HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth

Model Number: HUAWEI U9200, U9200, U9200-1, U9200-51

Report No: SYBH(Z-RF)003042012-2003
FCC ID: QISU9200
IC ID: 6369A-U9200

Reliability Laboratory of Huawei Technologies Co., Ltd.

Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China

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Notice

1. The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.
2. The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.
3. The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.
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5. The test report is invalid if not marked with the stamps or the signatures of the persons responsible for performing, revising and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.
8. Normally, the test report is only responsible for the samples that have undergone the test.
9. Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.

Applicant:	Huawei Technologies Co., Ltd.
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China
Date of Receipt Test Item:	Mar.17, 2012
Start Date of Test:	Mar.19, 2012
End Date of Test:	Mar.28, 2012
Test Result:	Pass

	Date	Name	Signature
Approved By Senior Engineer	May.03, 2012	Dai Linjun	
Reviewed By	May.03, 2012	Cousy Xu	
Operator	May.03, 2012	Huang Qiuliang	

Contents

1 General Information

1.1 Applied Standard	
Applied Rules:	47 CFR FCC Part 2:2010, Subpart J 47 CFR FCC Part 27:2010, Subpart C&L ANSI/TIA 603C:2004 IC RSS-Gen Issue 3 IC RSS-139 Issue 2
1.2 Test Location	
Test Location 1:	Reliability Laboratory of Huawei Technologies Co., Ltd.
Address:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R. China
1.3 Test Environment Condition	
Ambient Temperature:	20 – 25 °C
Ambient Relative Humidity:	45 – 55 %
Atmospheric Pressure:	101 kPa

2 Summary

Table 1 Summary of results

Test Case	FCC Part No.	Requirements	Result
AWS Band			
Transmitter Output Power	2.1046 & 27.50(d)	Peak EIRP not exceed 1 W	Pass
Modulation Characteristics	2.1047	Digital modulation	Pass
Occupied Bandwidth	2.1049	(Not specified)	Pass
Band Edges Compliance	2.1051 & 27.53(h)	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	2.1051 & 27.53(h)	Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/1 MHz, 30 MHz to 10th harmonics	Pass
Field Strength of Spurious Radiation	2.1053 & 27.53(h)	Below -13 dBm/1 MHz	Pass
Frequency Stability	2.1055 & 27.54	Stay within the authorized bands of operation	Pass

Table 2 Summary of results

Test Case	IC Standard No.	Requirements	Result
AWS Band			
Transmitter Output Power	RSS-Gen, §4.8; RSS-139, §6.4	EIRP not exceed 1 W Peak-to-average ratio not exceed 13 dB	Pass
Modulation Characteristics	RSS-139, §6.2	Digital modulation	Pass
Occupied Bandwidth	RSS-Gen, §4.6	(Not specified)	Pass
Band Edges Compliance	RSS-Gen, §4.9; RSS-139, §6.5	Below -13 dBm/1%*EBW, in 1 MHz range	Pass
Spurious Emission at Antenna Terminals	RSS-Gen, §4.9; RSS-139, §6.5	Below -13 dBm/1 kHz, 9 kHz to 150 kHz Below -13 dBm/10 kHz, 150 kHz to 30 MHz Below -13 dBm/1 MHz, 30 MHz to 5th harmonics	Pass
Field Strength of Spurious Radiation	RSS-Gen, §4.9; RSS-139, §6.5	Below -13 dBm/1 MHz	Pass
Frequency Stability	RSS-Gen, §4.7; RSS-139, §6.3	Stay within the authorized frequency block	Pass
Receiver Spurious Emissions (Conducted)	RSS-Gen, §4.10; RSS-Gen, §6; RSS-139, §6.6	Below 2 nW/4 kHz (-57 dBm/4 kHz), for 30 MHz - 1000 MHz Below 5 nW/MHz (-53 dBm/MHz), for above 1 GHz	Pass

3 Product Description

3.1 Production Information

3.1.1 General Description

HUAWEI U9200, U9200, U9200-1, U9200-51 is subscriber equipment in the WCDMA/GSM system. The HSPA+/HSUPA/HSDPA/UMTS frequency band is Band I, Band II, Band IV, Band V and Band VIII. Band IV can be used in this report. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The Mobile Phone implements such functions as RF signal receiving/transmitting, HSPA+/HSUPA/HSDPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video, MMS service, GPS, AGPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

3.1.2 Board Information

Table 3 Board Information

Ascend P1; HSPA+/HSUPA/HSDPA/UMTS/GSM/GPRS/EDGE Mobile Phone with Bluetooth		
HUAWEI U9200, U9200, U9200-1, U9200-51		
Board and Module		
Hardware Version	Software Version	Description
Ver.B	U9200-1V100R001C00B201	Main board of Mobile Phone

3.1.3 Adapter Technical Data

AC/DCAdapter Model	HW-050100E3W
Manufacturer	HUIZHOU BYD ELECTRONIC CO,. LTD.
Input Voltage	~100-240V 50/60Hz 0.2A
Output Voltage	5V ⎓ 1A
Rated Power	5W

3.1.4 Battery Technical Data

Name	Manufacture	Description
Rechargeable Li-ion	Huawei Technologies Co., Ltd.	Battery Model: HB4Q1 Rated capacity: 1670mAh Nominal Voltage: ⎓ +3.7V Charging Voltage: ⎓ +4.2V

4 Test Description

4.1 Supported Frequency Range

Characteristics	Description
Uplink	1710 to 1755 MHz
Downlink	2110 to 2155 MHz

4.2 Transmitter / Receiver Characteristics

Characteristics	Description
System Type	UMTS
TX Output Power (per Antenna Port)	UMTS system: 24dBm;
Channel Spacing(s) / Bandwidth(s)	UMTS system: 5 MHz
Designation of Emissions	UMTS system: 4M08F9W

4.3 Antenna Gain

Antenna Gain(dBi)	0.6

4.4 Power Supply

Specification	Description
Power Supply Type	Directly Connected to DC /AC Power Supply
Input to EUT (DC power)	DC Voltage Nominal: ⎓ 3.7 V DC Voltage Range: ⎓ 3.5 V to 4.2 V
Input to EUT (AC power)	AC Voltage Nominal: ~ 230 V (50/60 Hz) AC Voltage Range: ~100-240V

5 General Test Conditions / Configurations

5.1 RF Channels under Test

Test Mode	TX / RX	RF Channel		
		Bottom (B)	Middle (M)	Top (T)
TM1/TM2/TM3	TX	Channel1312(B)	Channel1412(M)	Channel1513(T)
		1712.4MHz	1732.4MHz	1752.6MHz
	RX	Channel 1537	Channel 1637	Channel 1738
		2112.4 MHz	2132.4 MHz	2152.6 MHz

5.2 Test Modes

Test Mode	Test Modes Description
TM1	WCDMA ,QPSK modulation
TM2	HSDPA , QPSK modulation
TM3	HSUPA , QPSK modulation

5.3 Test Environments

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.5V
	VN	3.7V
	VH	4.2V

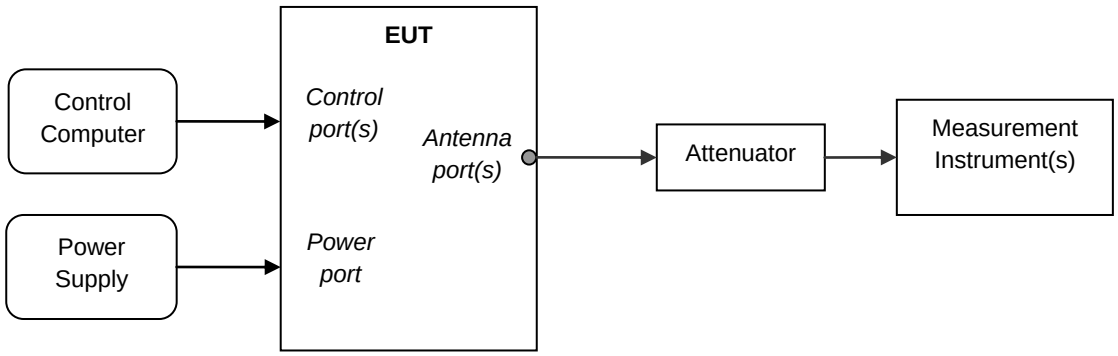
NOTE: VL= lower extreme test voltages
VN= nominal voltage
VH= upper extreme test voltage
TN= normal temperature

5.4 Test Setups

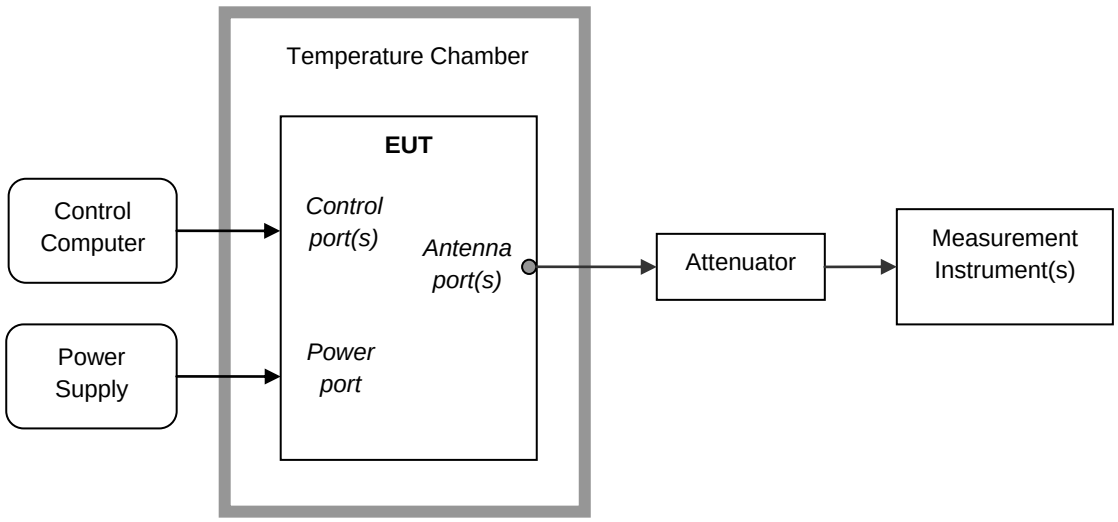
5.4.1 General Test Setup Configurations

Configuration	Description
Test Antenna Ports	Until otherwise declared, all TX tests are ONLY performed at the main Transmitter antenna port (e.g. TRXA, TXA and so on) of the EUT, and all RX tests are ONLY performed at the main Receiver antenna port (e.g. TRXA, RXA and so on) of the EUT.
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

5.4.2 Test Setup 1



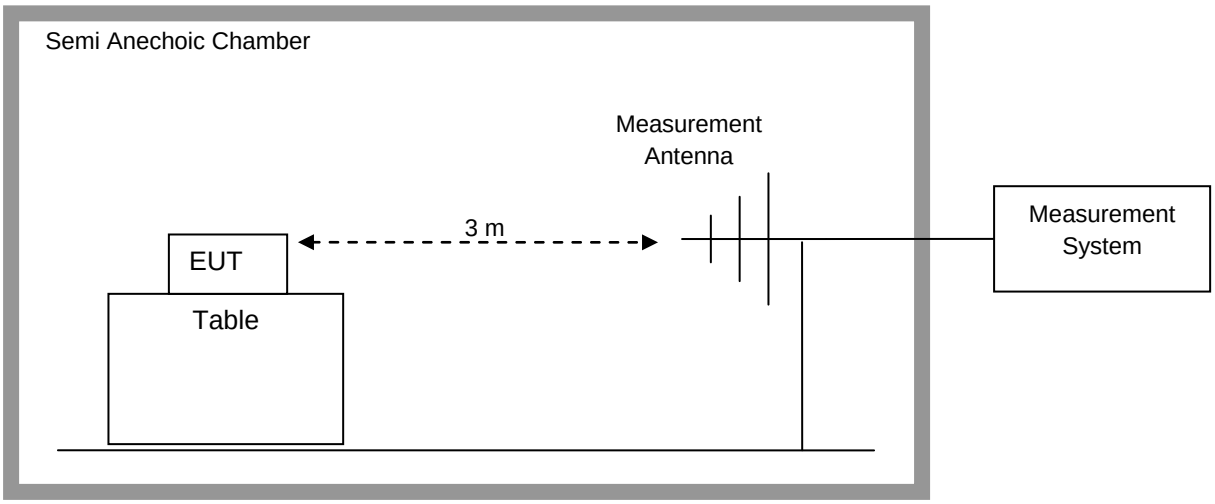
5.4.3 Test Setup 2



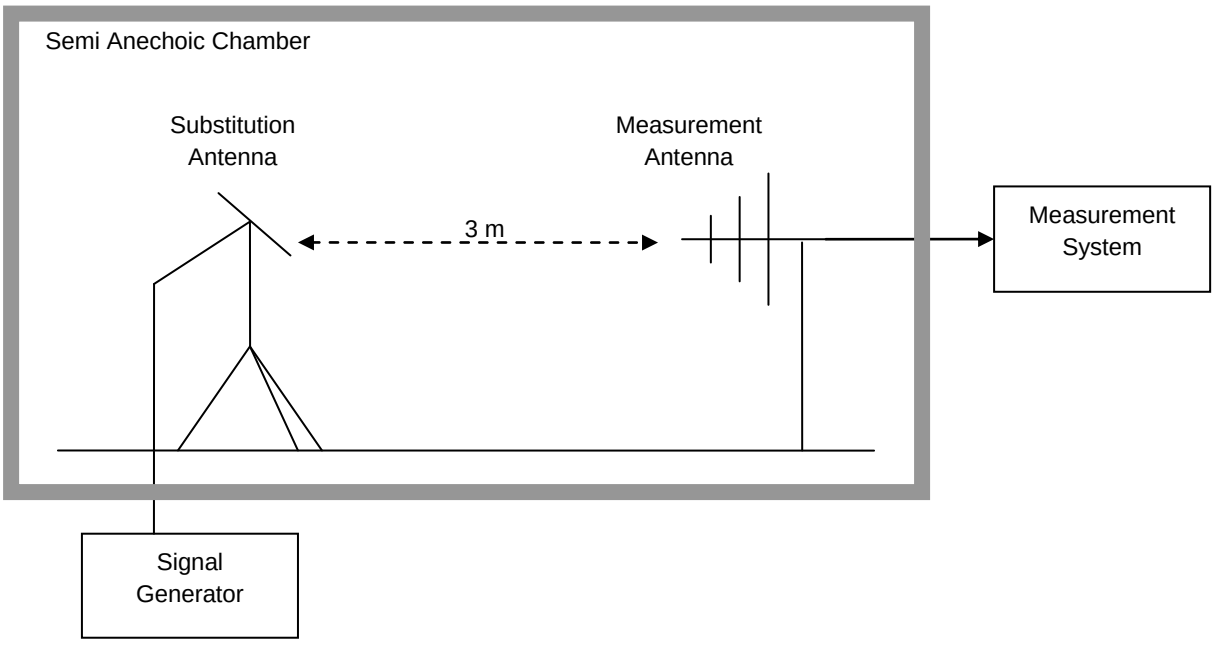
5.4.4 Test Setup 3

NOTE: Effective Isotropic radiated power (EIRP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

Step 1: Pre-test



Step 2: Substitution method to verify the maximum EIRP



5.5 Test Conditions

Test Case	Test Conditions	
Transmitter Output Power	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1 & Test Setup 3
	Detector	RMS
	RF Channels (TX)	B, M, T
	Test Mode	TM1/TM2/TM3
Modulation Characteristics	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	RF Channels (TX)	M
	Test Mode	TM1
Occupied Bandwidth	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	B, M, T
	Test Mode	TM1
Band Edges Compliance	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	RMS
	RF Channels (TX)	B, T
	Test Mode	TM1
Spurious Emission at Antenna Terminals	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 1
	Detector	PK
	RF Channels (TX)	B, M,T
	Test Mode	TM1
Field Strength of Spurious Radiation	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 3
	Detector	PK
	RF Channels (TX)	M
	Test Mode	TM1/TM2/TM3
Frequency Stability	Test Configuration	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage; (2) 85%, 100% and 115% of Rated Voltage at Ambient Temperature.
	Test Setup	Test Setup 2

Test Case	Test Conditions	
	RF Channels (TX)	M
	Test Mode	TM1
Receiver Spurious Emissions	Test Configuration	Ambient Temperature & Rated Voltage
	Test Setup	Test Setup 3
	Detector	QP,PK, AV
	RF Channels (TX)	M
	Test Mode	TM1/TM2/TM3

6 Main Test Instruments

Table 4 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sep.27,2012
Universal Radio Communication Tester	R&S	CMU200	117341	Jan.12.2013
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug.31,2012
Spectrum Analyzer	Agilent	E4440A	MY49420179	Apr.20,2012
Signal Analyzer	R&S	FSQ31	200021	Sep.27,2012
Temperature Chamber	WEISS	WKL64	24600294	Feb.13,2013
Signal generator	Agilent	E8257D	MY49281095	Jul.09.2012
Test receiver	R&S	ESU26	100150	May.29.2012
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	919/1009	Jan.29.2013
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	979/917	Jan.29.2013
Horn Antenna	R & S	HF906	100683	May.15, 2012
Horn Antenna	R & S	HF906	100684	Jul.01, 2012
Broadband Antenna	Schwarzbeck	VULB 9163	9163-357	May.15, 2012
Broadband Antenna	Schwarzbeck	VULB 9163	9163-356	May.15, 2012

7 Test Results

No.	Test Item	Test Result
1	Transmitter Output Power	Appendix A
2	Modulation Characteristics	Appendix B
3	Occupied Bandwidth	Appendix C
4	Band Edges Compliance	Appendix D
5	Spurious Emission at Antenna Terminals	Appendix E
6	Field Strength of Spurious Radiation	Appendix F
7	Frequency Stability	Appendix G
8	Receiver Spurious Emissions	Appendix H
9	Photos of Test Setup	Appendix I

NOTE: The Appendix I only photos of test setup for Field Strength of Spurious Radiation and Receiver Spurious Emissions, no test data.

8 Measurement Uncertainty

For a 95% confidence level (k=2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Test Item		Extended Uncertainty
Transmitter Output Power	Power (dBm)	U =0.39 dB
Occupied Bandwidth	Magnitude (%)	U=0.2%
Band Edge Compliance	Disturbance Power (dBm)	U=2.0 dB
Conducted Spurious Emissions	Disturbance Power (dBm)	U=2.0 dB
Field Strength of Spurious Radiation	ERP (dBm)	U=4.6 dB (30 MHz – 1GHz) U=3.0 dB (above 1 GHz)
Frequency Stability	Frequency Accuracy (ppm)	U=0.21 ppm

----------The END----------

Appendix A

Transmitter Output Power

According to FCC Part 2.1046 & Part 27 Subpart C&L & RSS-139

Conducted Power of Transmitter

Table 1 Measurement Results

TEST CONDITIONS		RF Output Power (Conducted)					
		Channel 1312(B)		Channel 1412(M)		Channel 1513(T)	
		1712.4MHz		1732.4MHz		1752.6MHz	
		dBm		dBm		dBm	
T_{nom} / V_{nom}		Measured	Limit	Measured	Limit	Measured	Limit
TM1		24.05	30	23.86	30	23.88	30
TM2	Case1	23.78	30	23.53	30	23.58	30
	Case2	22.36	30	22.13	30	22.17	30
	Case3	22.06	30	21.86	30	21.91	30
	Case4	21.73	30	21.53	30	21.54	30
TM3	Case1	22.62	30	22.41	30	22.47	30
	Case2	19.41	30	19.29	30	19.31	30
	Case3	21.46	30	21.27	30	21.25	30
	Case4	19.99	30	19.81	30	19.86	30
	Case5	22.87	30	22.69	30	22.72	30

Efficient Isotropic Radiated Power（EIRP）

Table 2 Substitution Results

Test Mode	Freq. [MHz]	Meas. Level [dBm]	Substitution Antenna Type	SGP [dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	Limit [dBm]	Result
TM1	1712.4	24.65	Horn Ant.	21.12	4.5	1.0	24.62	30	Pass
TM1	1732.4	24.46	Horn Ant.	21.06	4.5	1.0	24.56	30	Pass
TM1	1752.6	24.48	Horn Ant.	20.73	4.8	1.0	24.53	30	Pass

Note: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should take to calculate it,

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b, SGP=Signal Generator Level

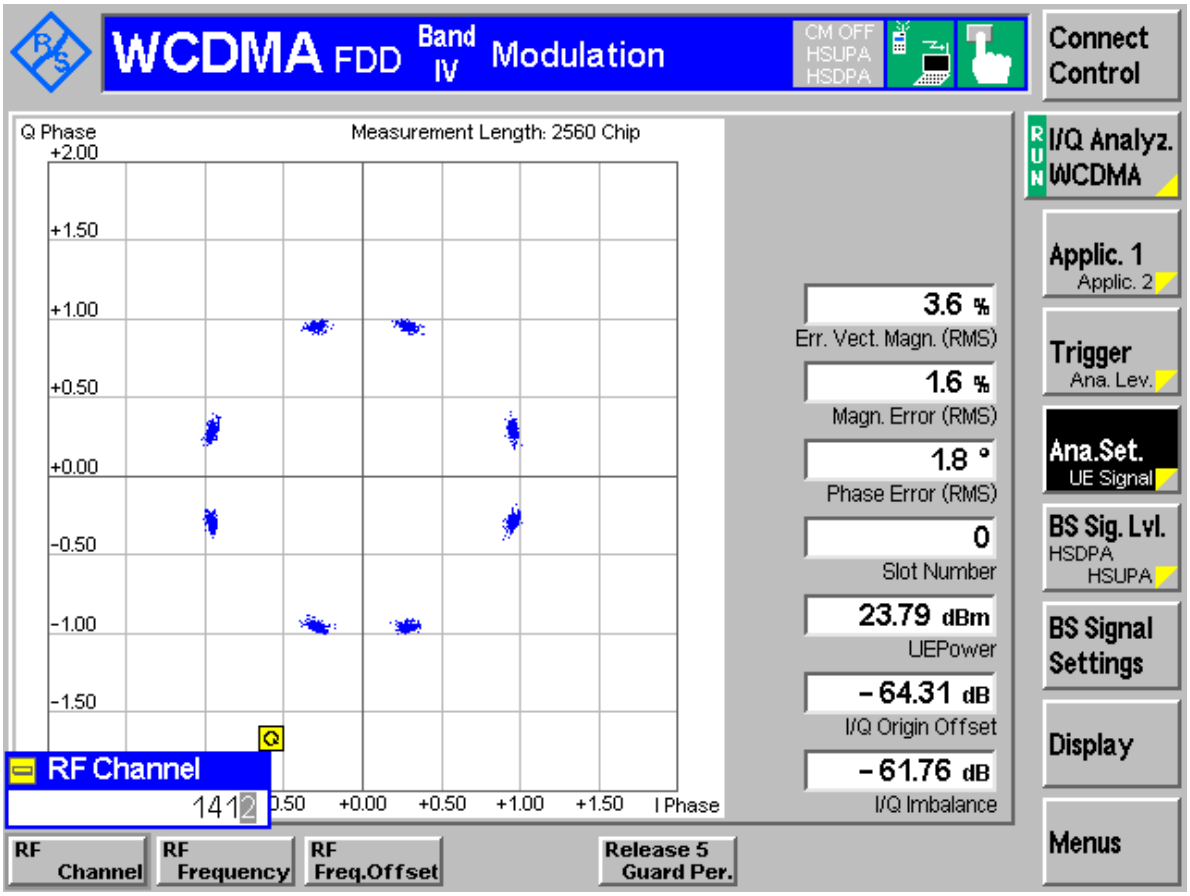
----------The END----------

Appendix B

Modulation Characteristics

According to FCC Part 2.1047 & Part 27 Subpart C&L & RSS-139

TM1: WCDMA
Channel 1412



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Appendix C

Occupied Bandwidth

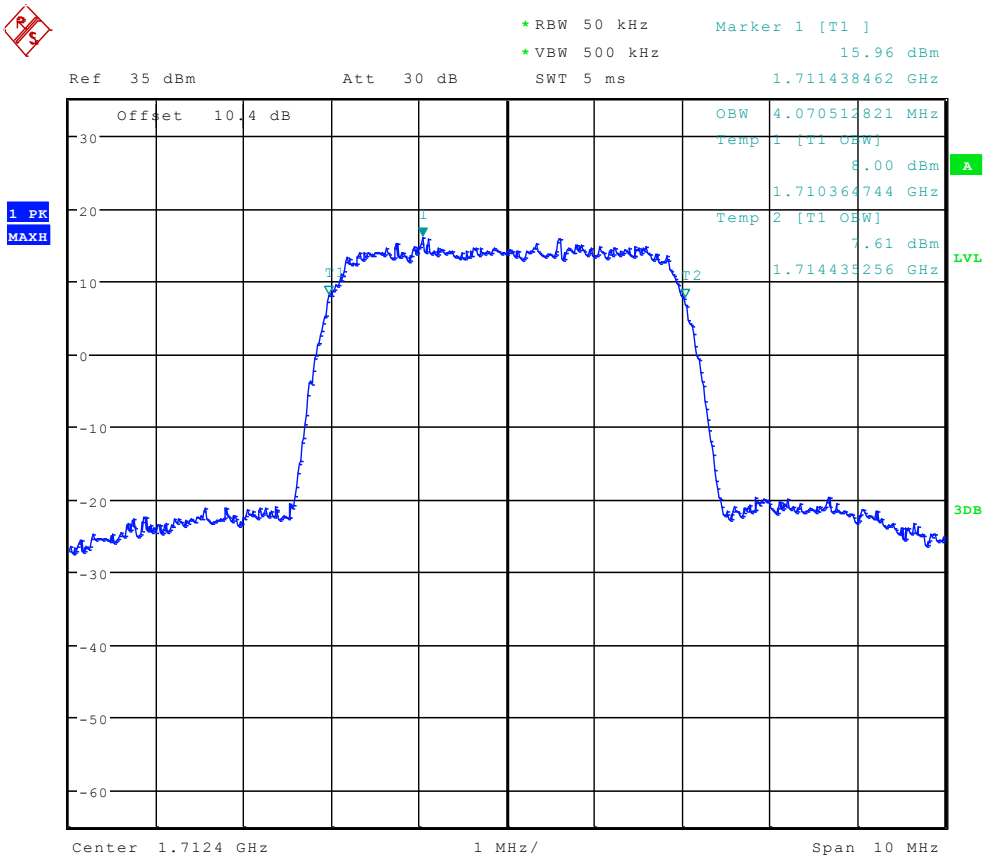
According to FCC Part 2.1049 & Part 27 Subpart C&L & RSS-139

Result Table

Table 1 Measurement Results

Test Mode	RF Channel	Occupied Bandwidth [MHz]	Verdict
TM3	1312	4.07	Pass
	1412	4.07	Pass
	1513	4.07	Pass

TM1: WCDMA
Channel 1312



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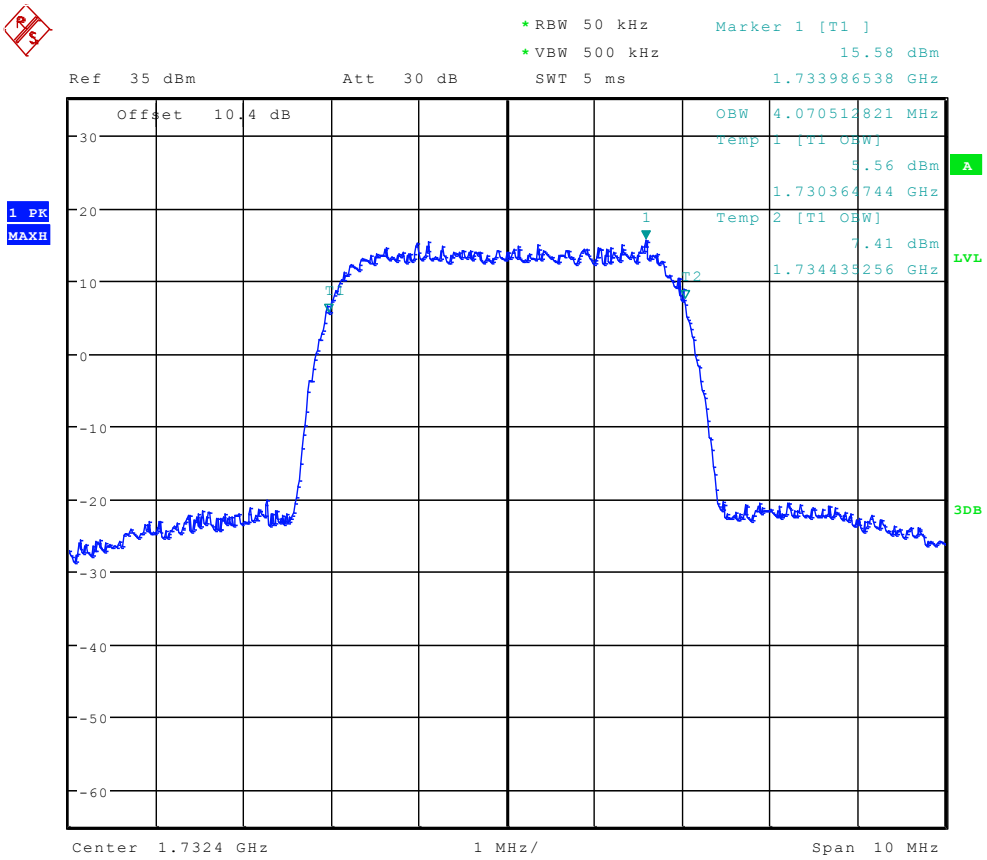
Channel 1412



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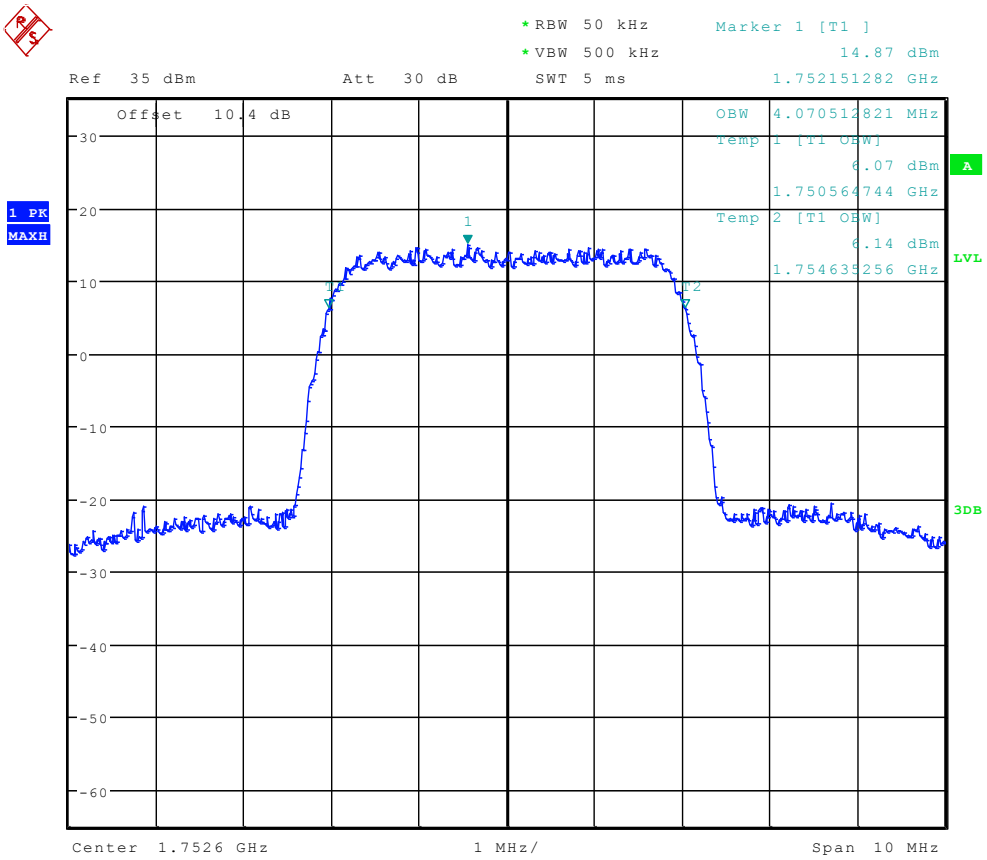
Channel 1513



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Appendix D

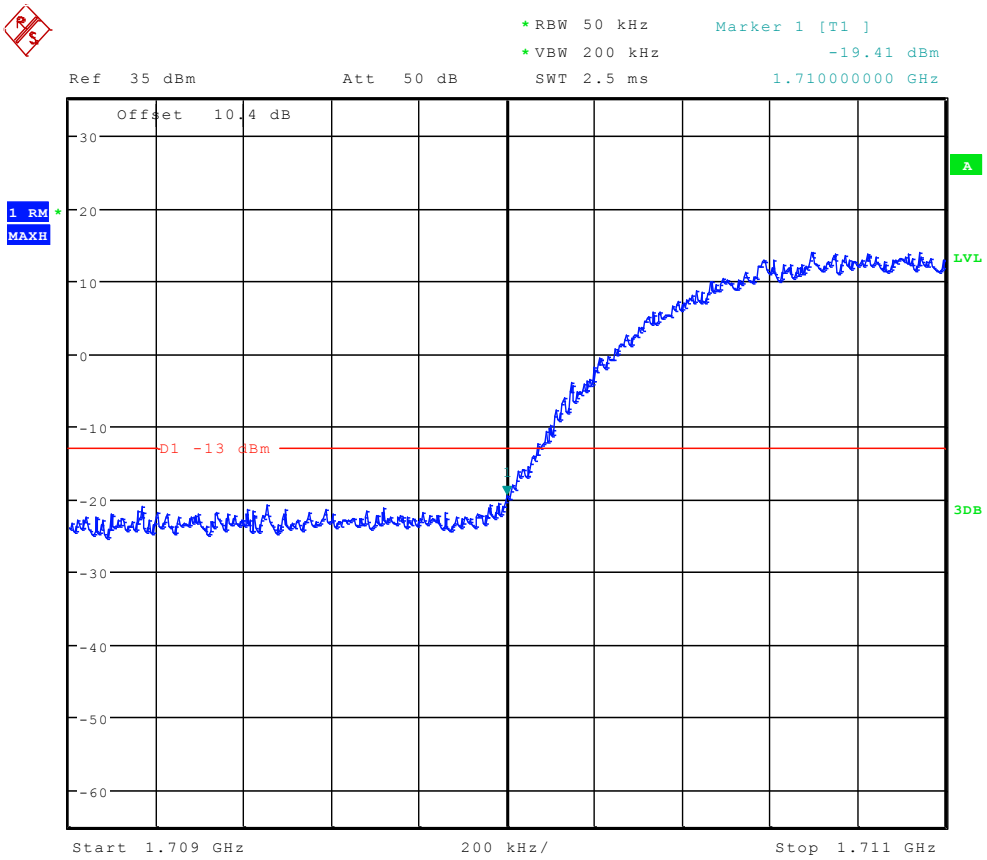
Band Edges Compliance

According to FCC Part 2.1051 & Part 27 Subpart C&L & RSS-139

TM1: WCDMA

Left Edge

Channel 1312



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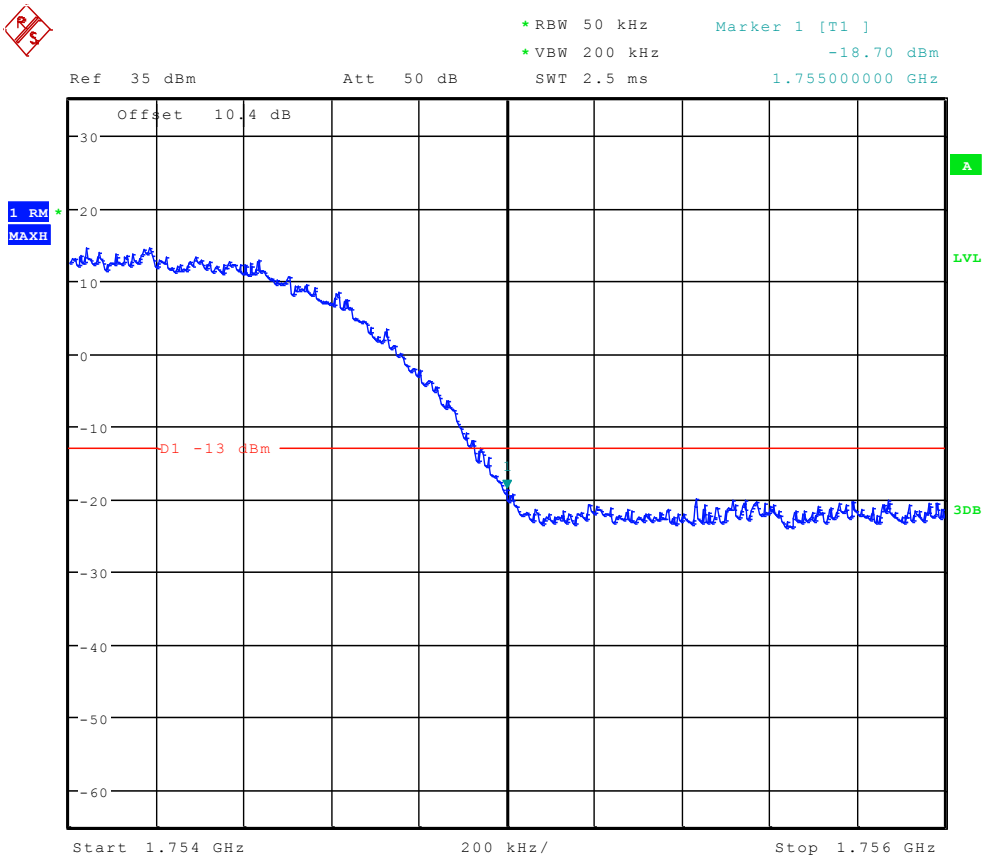
Right Edge

Channel 1513



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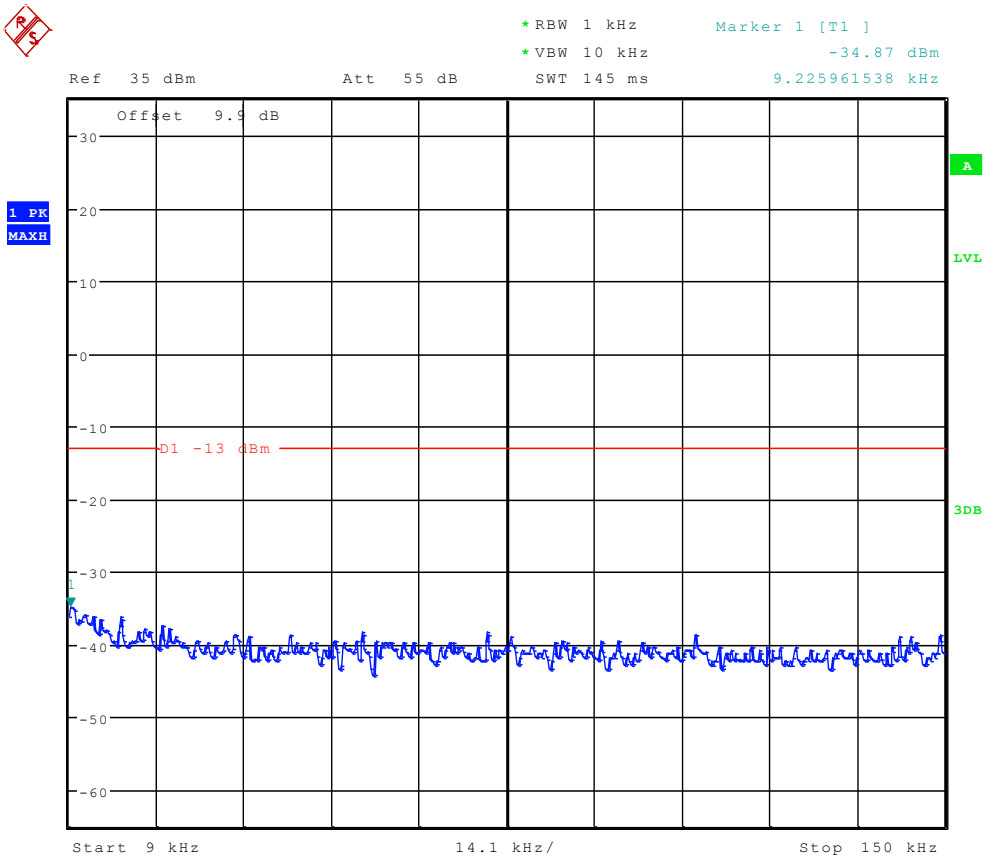
Appendix E

Spurious Emission at Antenna Terminal

According to FCC Part 2.1051 & Part 27 Subpart C&L & RSS-139

TM1: WCDMA

Channel 1312



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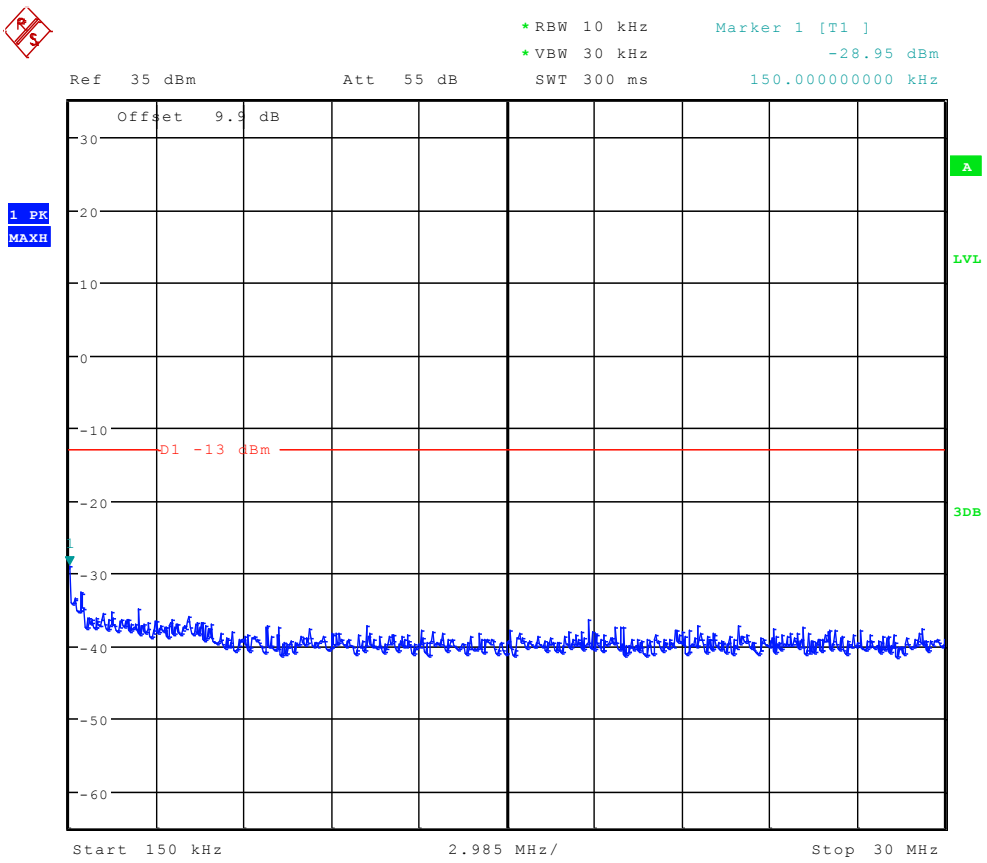

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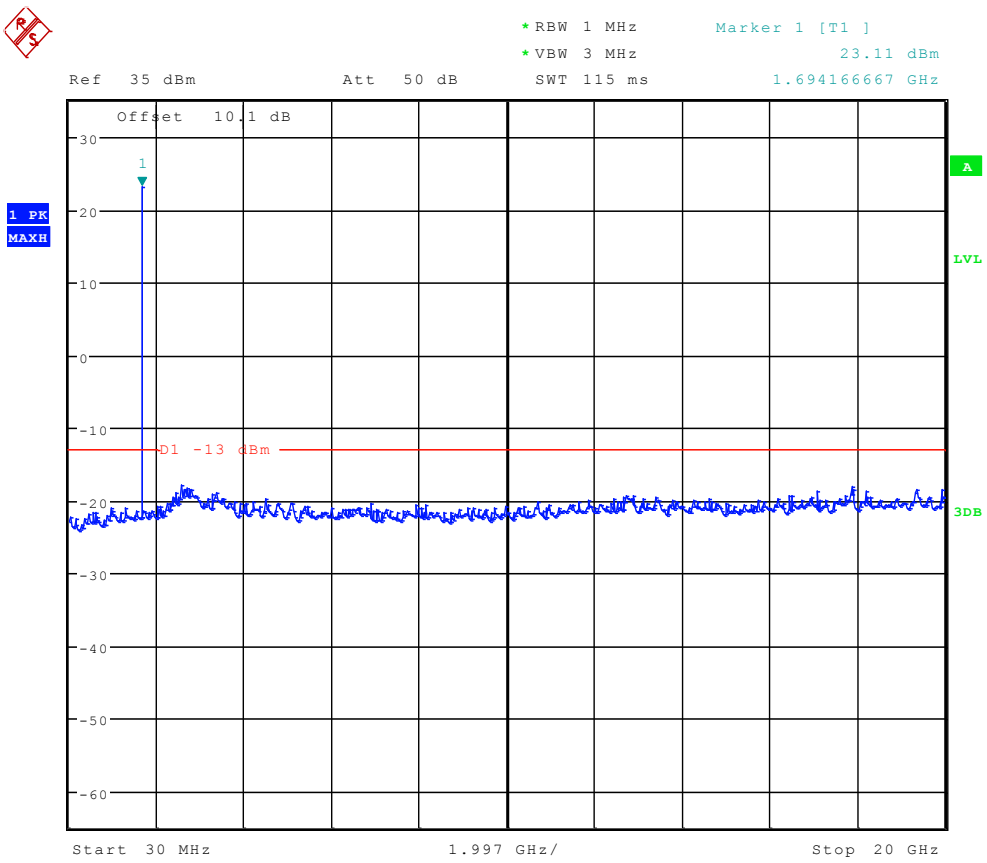

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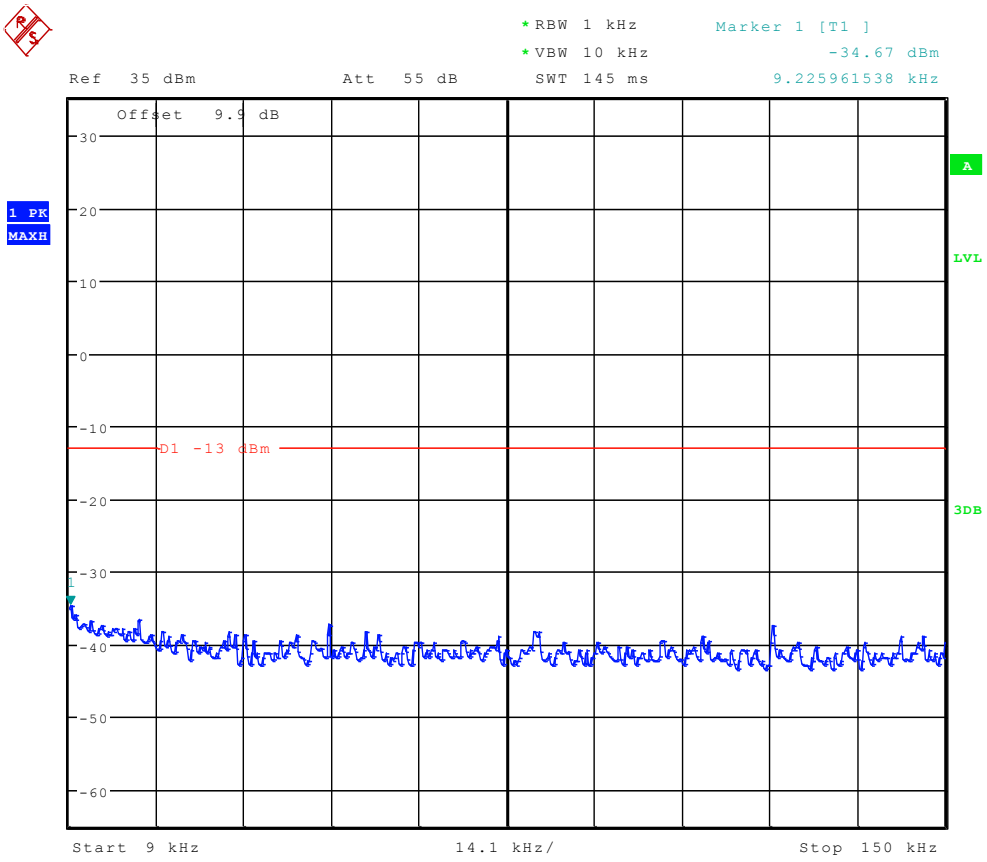
Channel 1412



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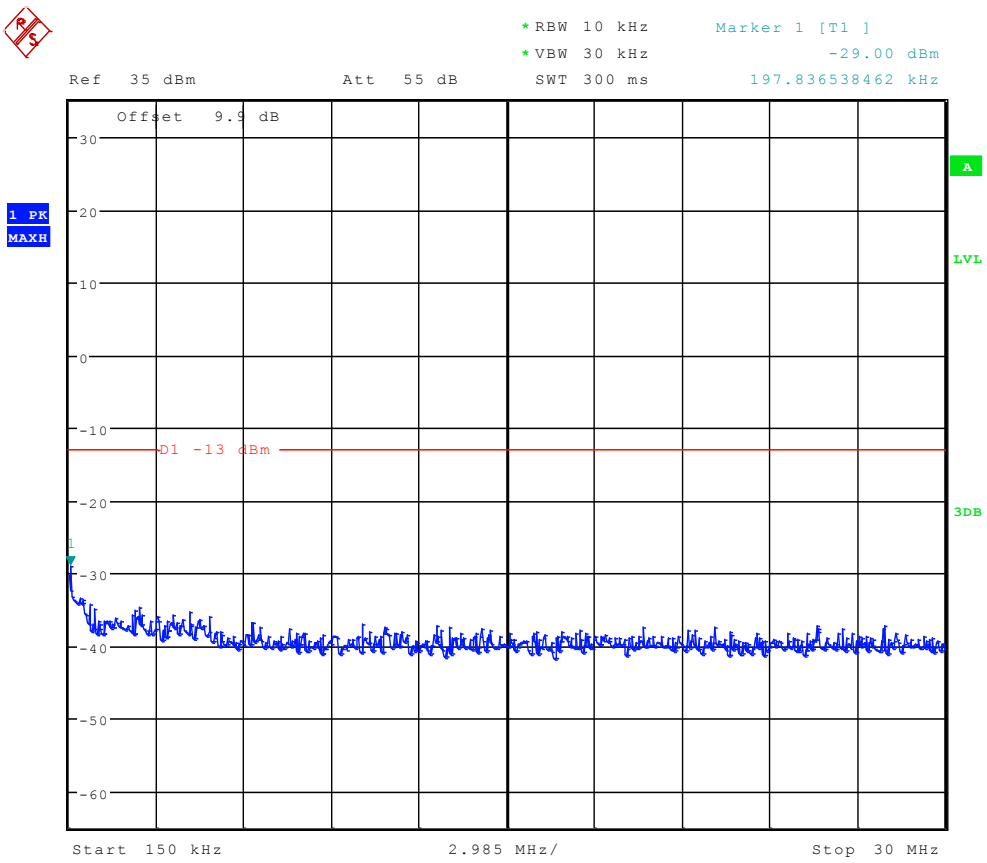

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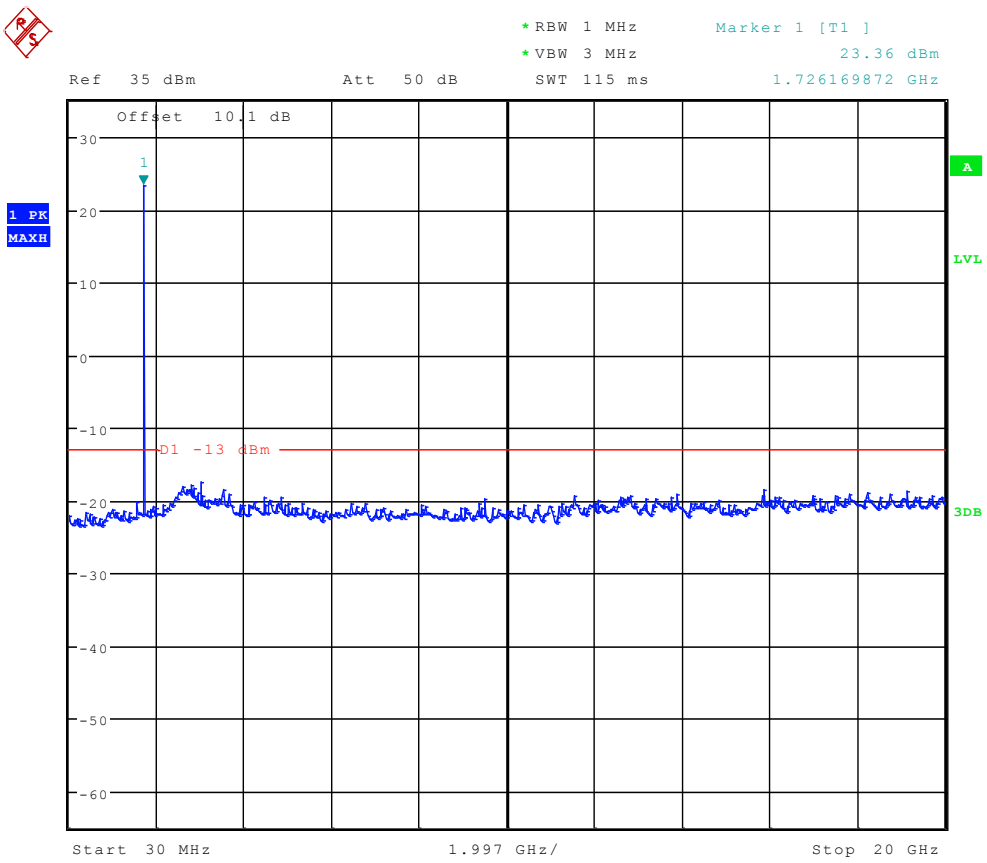

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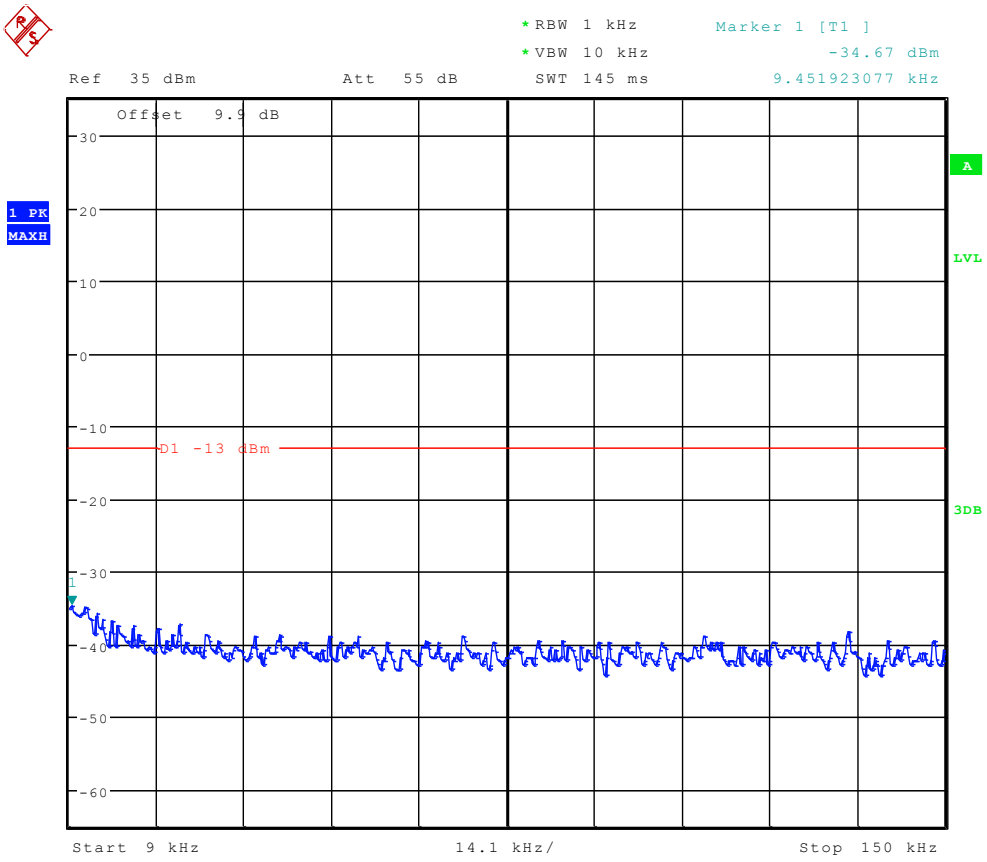
Channel 1513



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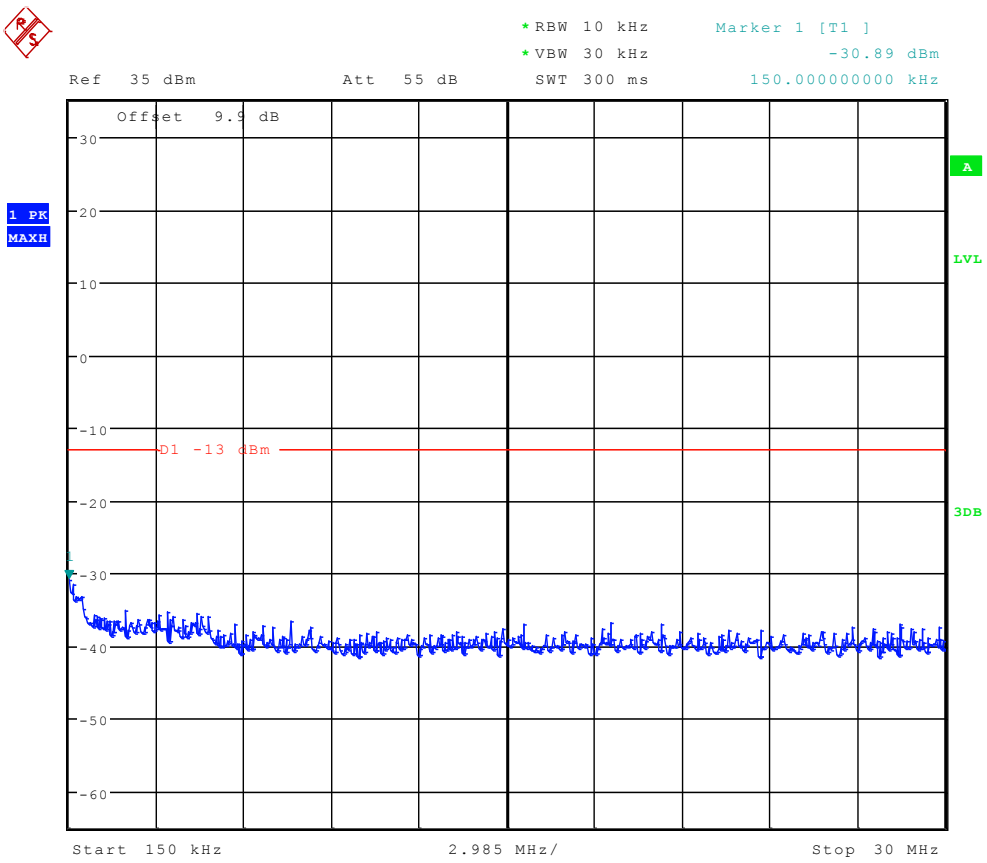

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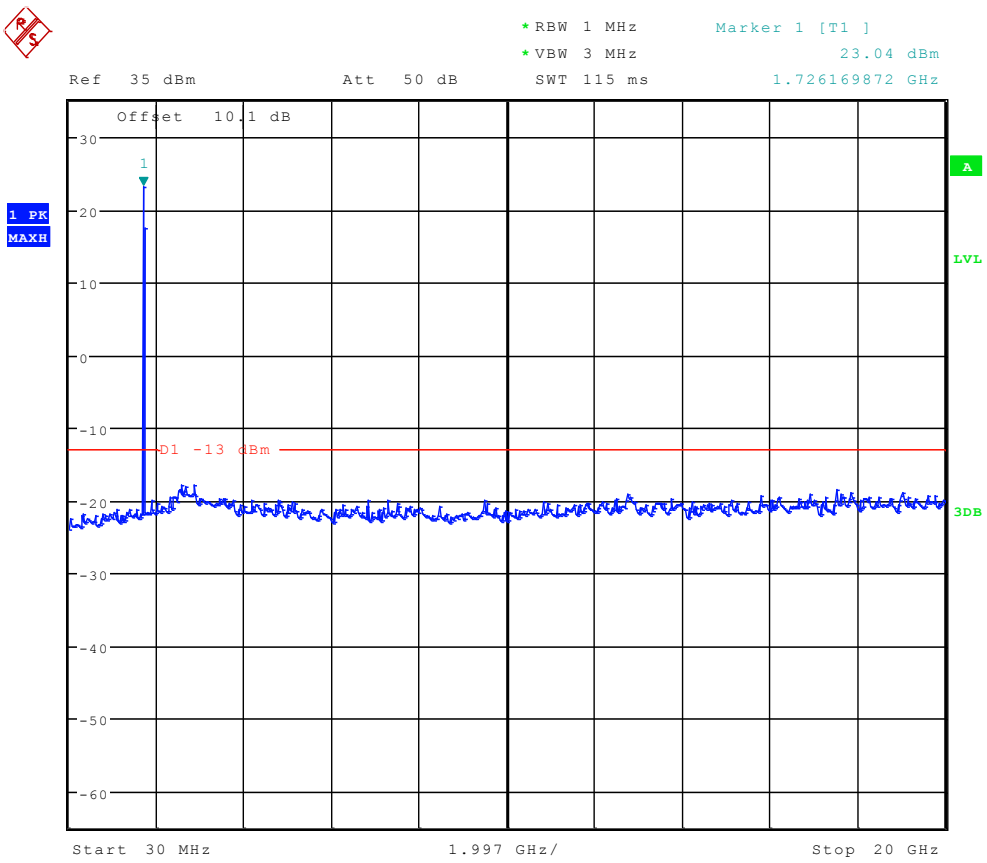

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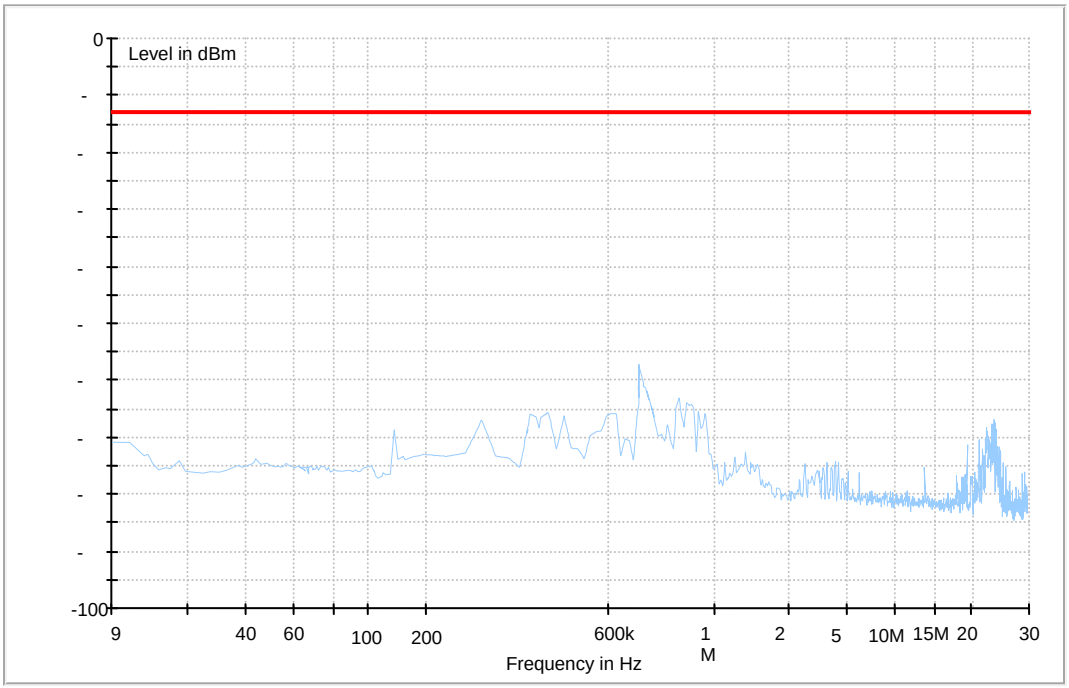
Appendix F

Radiated spurious emission

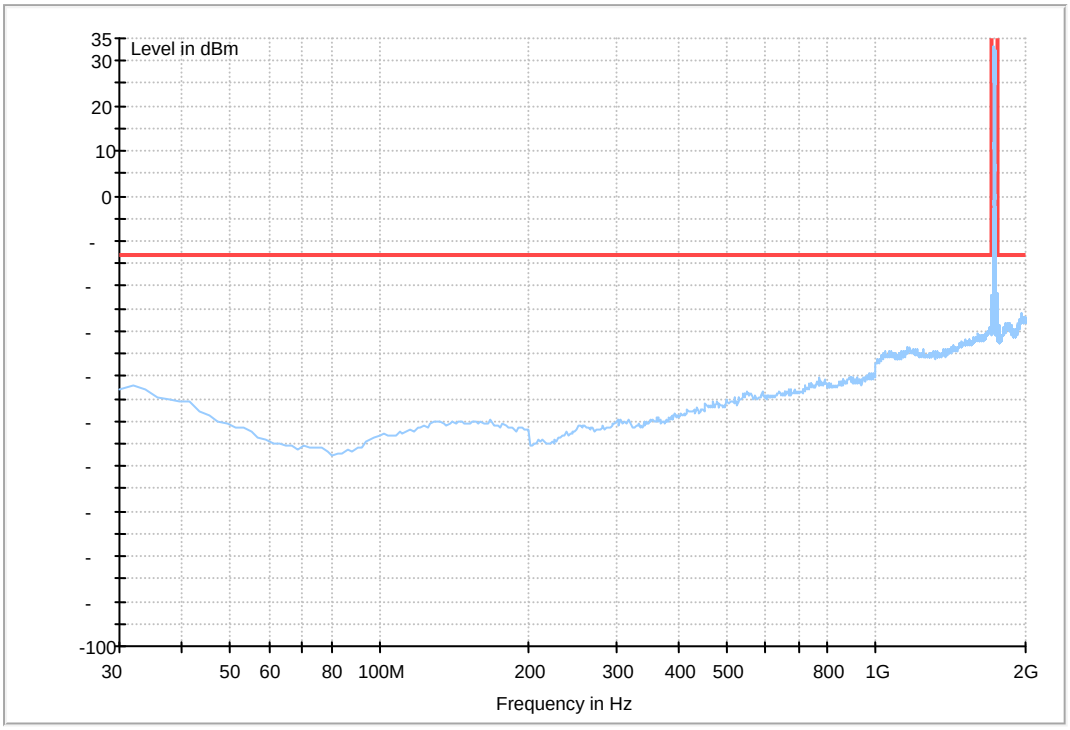
According to FCC Part 2.1053& Part 27.53(g)
& RSS-139

WCDMA AWS

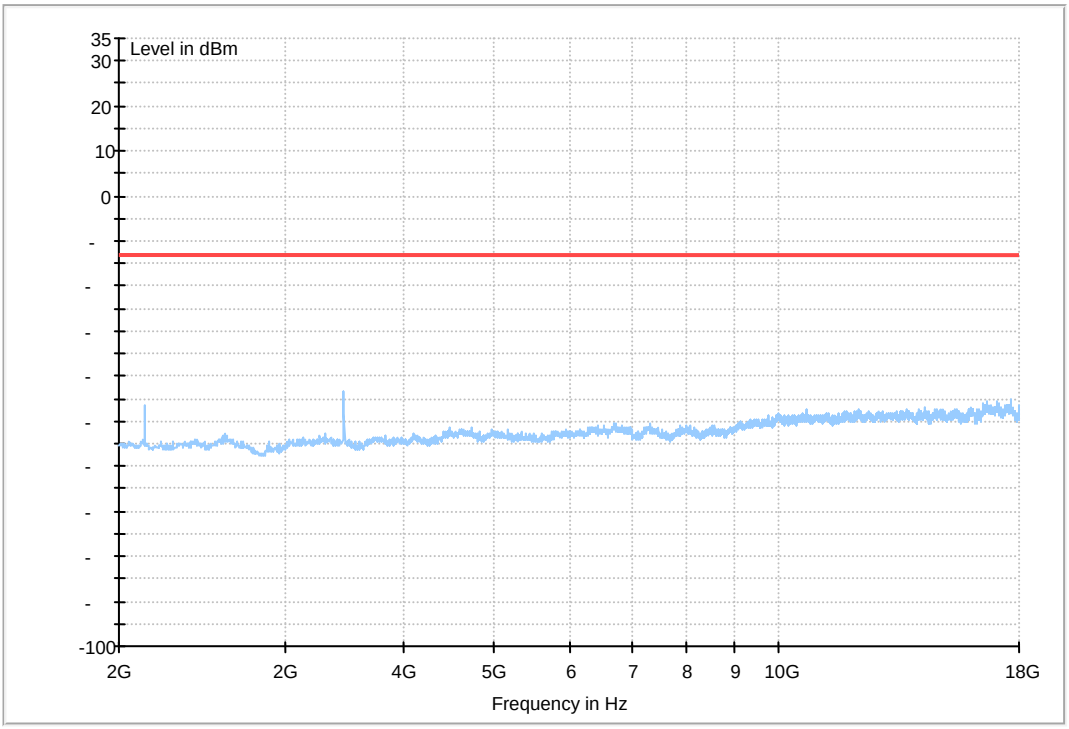
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-2GHz)

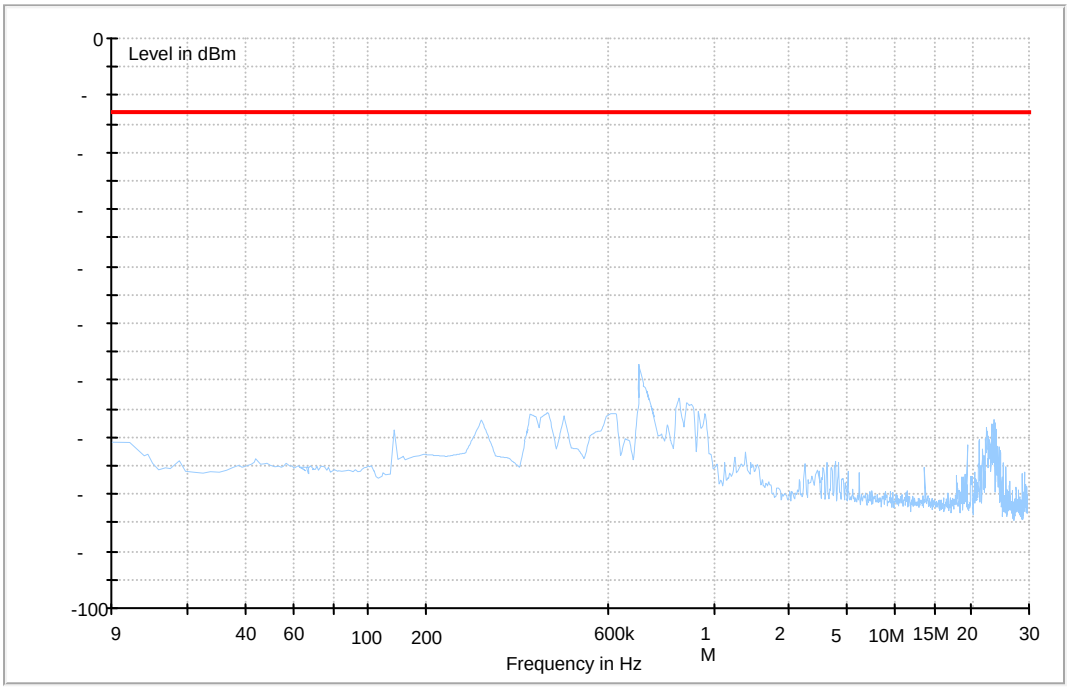


Traffic Mode (2GHz-18GHz)

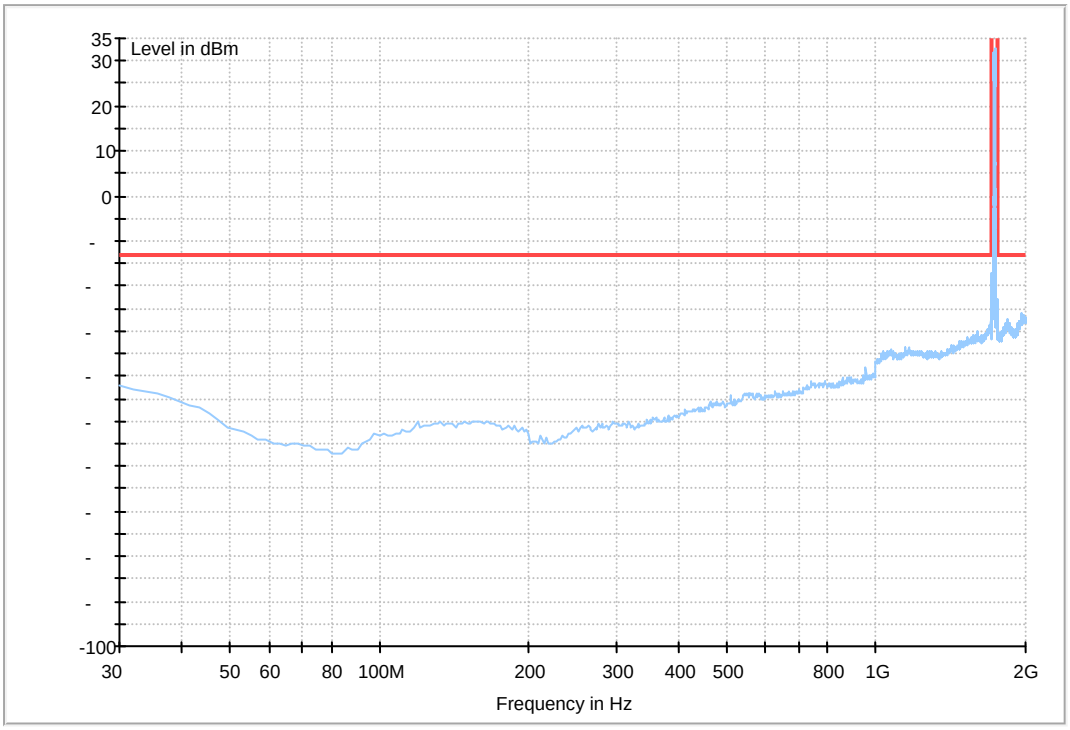


HSDPA AWS

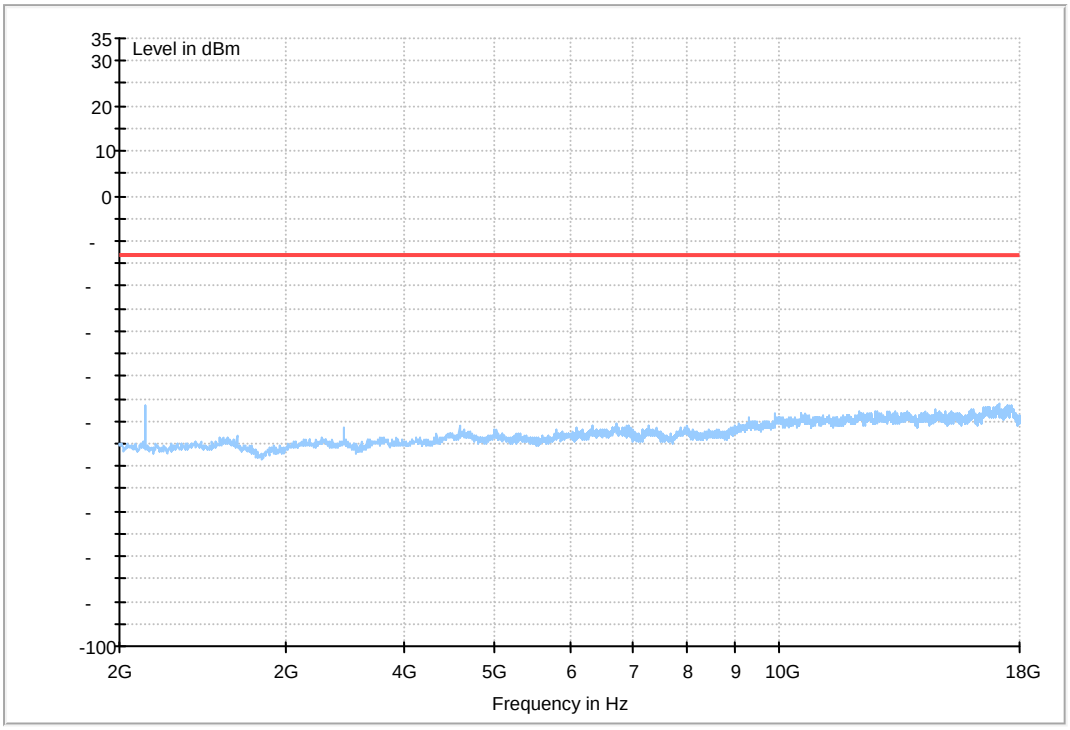
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-2GHz)

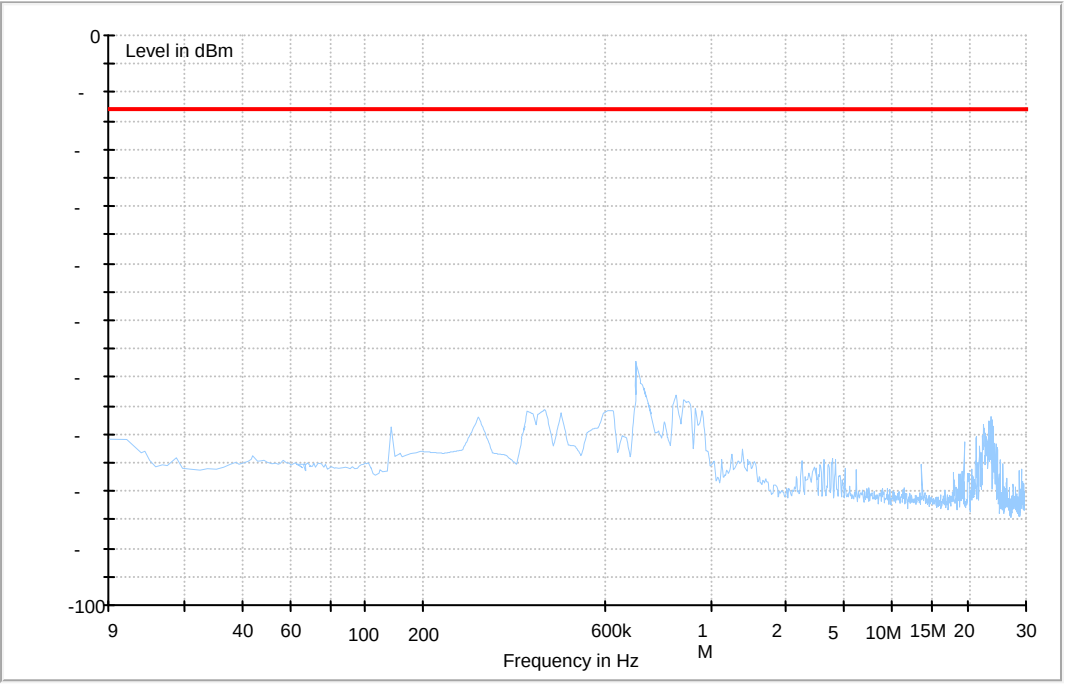


Traffic Mode (2GHz-18GHz)

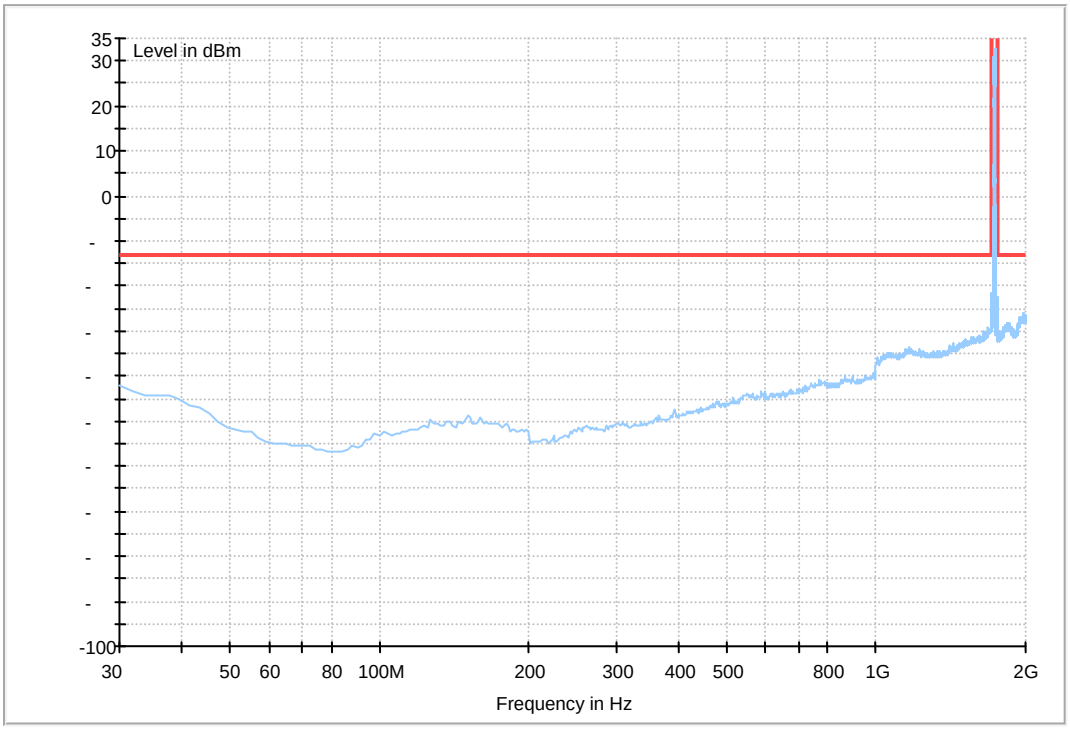


HSUPA AWS

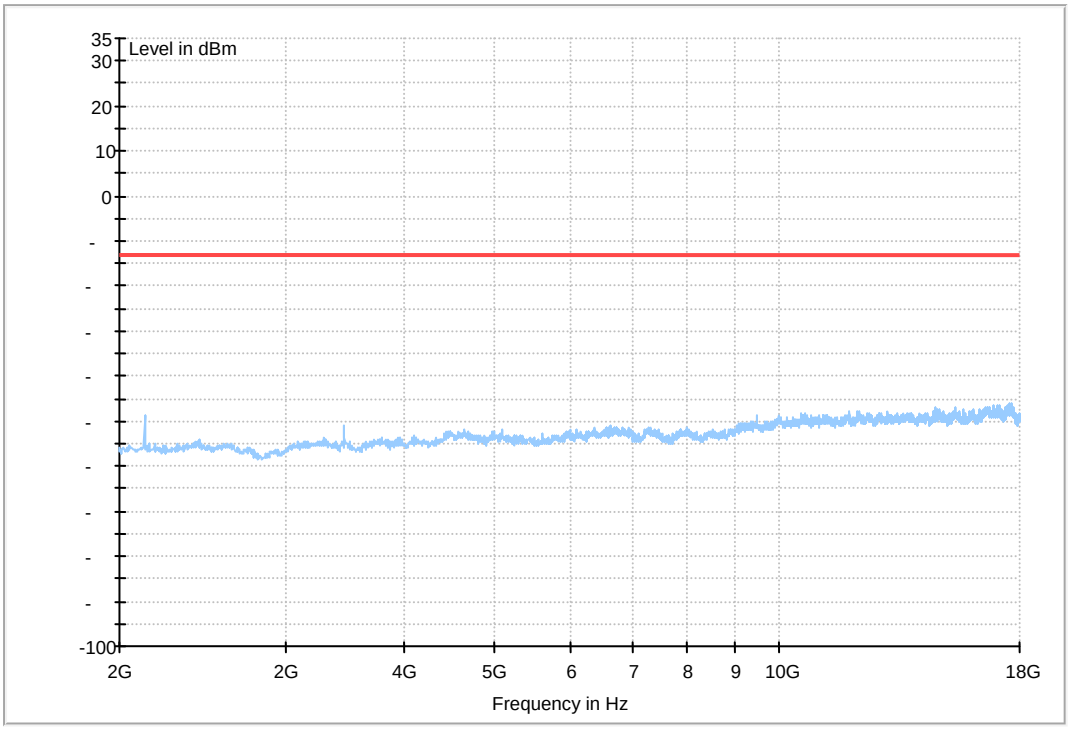
Traffic Mode (9kHz-30MHz)



Traffic Mode (30MHz-2GHz)



Traffic Mode (2GHz-18GHz)



----------The END----------

Appendix G

Frequency Stability

According to FCC Part 2.1055 & Part 27.54
& RSS-139

Frequency Error vs. Temperature:

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	VN	-30 °C	-10	-0.005772	---	±2.5	Pass
			-20 °C	-16	-0.009236	---	±2.5	Pass
			-10 °C	12	0.006927	---	±2.5	Pass
			0 °C	-18	-0.010390	---	±2.5	Pass
			10 °C	15	0.008659	---	±2.5	Pass
			20 °C	-14	-0.008081	---	±2.5	Pass
			30 °C	-17	-0.009813	---	±2.5	Pass
			40 °C	13	0.007504	---	±2.5	Pass
			50 °C	-14	-0.008081	---	±2.5	Pass

Frequency Error vs. Voltage:

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	20 °C	VL	14	0.008081	---	±2.5	Pass
			VN	-11	-0.006350	---	±2.5	Pass
			VH	17	0.009813	---	±2.5	Pass

----------The END----------

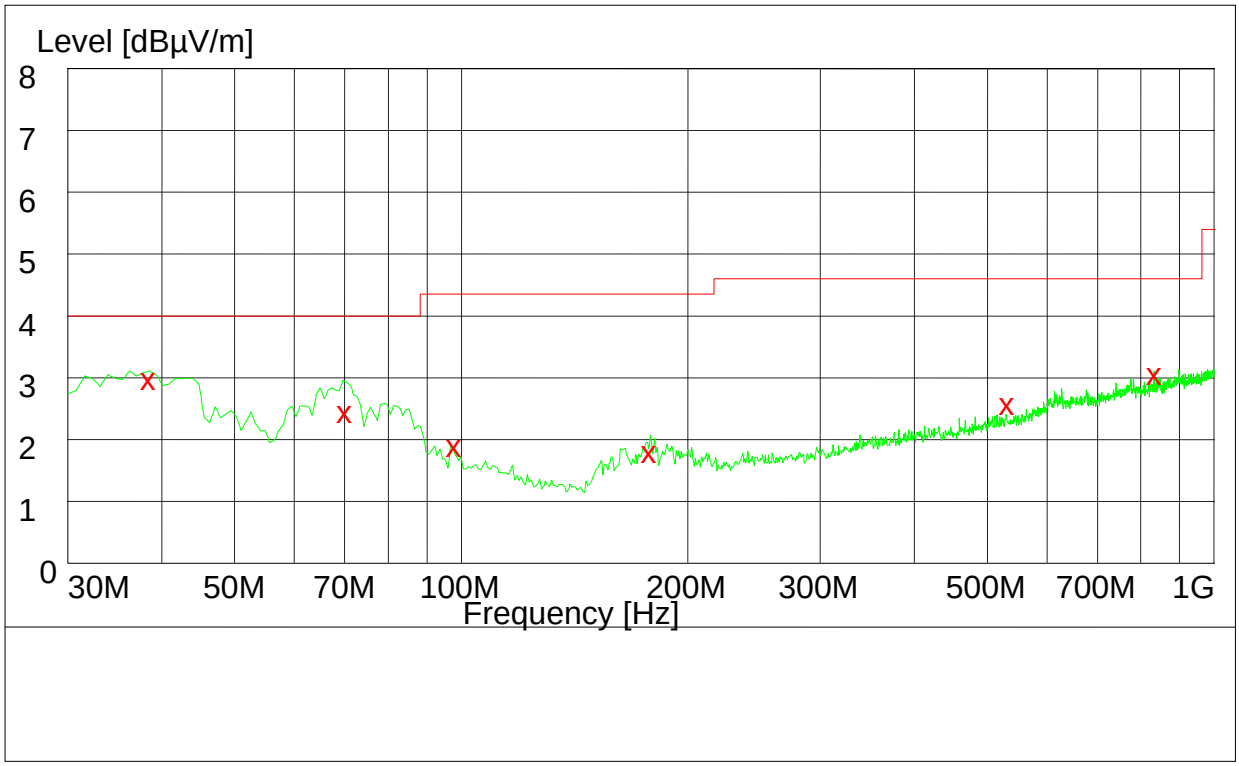
Appendix H

Receiver Spurious Emissions

According to RSS-139

This test was carried out in all the test modes, Here only the worst test result was shown.

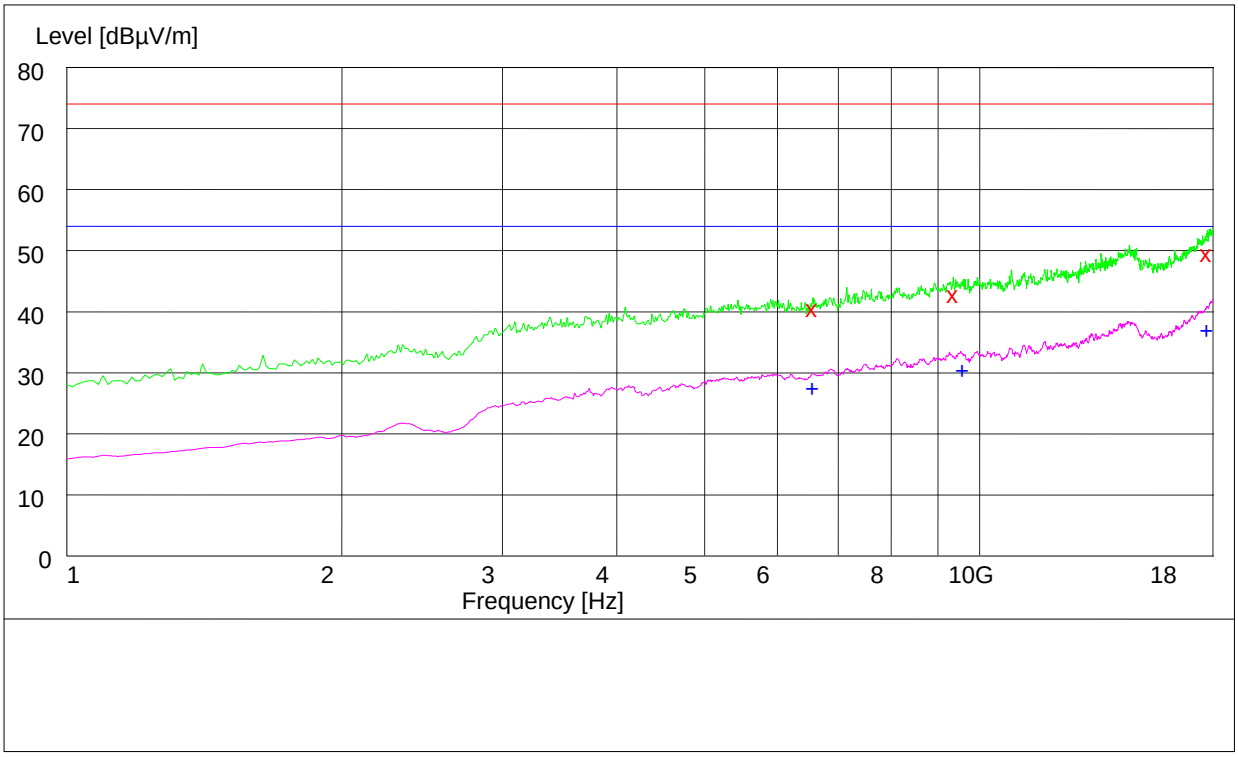
30MHz~1GHz



MEASUREMENT RESULT: QP Detector

Frequency	Level	Transducer	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBµV/m	dB	dBµV/m	dB	cm	deg	
38.340000	31.20	15.2	40.0	8.8	100.0	259.00	VERTICAL
70.440000	25.90	10.9	40.0	14.1	100.0	130.00	VERTICAL
97.560000	20.40	13.2	40.0	19.6	100.0	29.00	VERTICAL
177.360000	19.40	11.0	40.0	20.6	118.0	294.00	HORIZONTAL
530.400000	27.10	19.7	47.0	19.9	200.0	15.00	HORIZONTAL
831.600000	31.90	24.0	47.0	15.1	200.0	88.00	VERTICAL

1GHz~18GHz



MEASUREMENT RESULT: PK Detector

Frequency	Level	Transducer	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBµV/m	dB	dBµV/m	dB	cm	deg	
6569.500000	41.20	0.9	74.0	32.8	199.0	0.00	HORIZONTAL
9370.500000	43.40	7.2	74.0	30.6	200.0	360.00	HORIZONTAL
17762.000000	50.20	18.3	74.0	23.8	197.0	315.00	VERTICAL

MEASUREMENT RESULT: AV Detector

Frequency	Level	Transducer	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBµV/m	dB	dBµV/m	dB	cm	deg	
6564.500000	28.00	0.9	54.0	26.0	200.0	268.00	VERTICAL
9592.000000	30.90	7.4	54.0	23.1	200.0	333.00	VERTICAL
17745.500000	37.50	18.3	54.0	16.5	140.0	129.00	HORIZONTAL

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