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TEST REPORT

FCC Part 22 Subpart H / Part 24 Subpart E / RSS-132 / RSS-133

Report Reference No. : CTL1708188063-WF01

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Product Name : Vehicle Communicator

Model/Type reference : UV350

List Model(s)..... : N/A

Trade Mark..... : Uniden

FCC ID..... : 2AOCX-UV350

IC..... : 23378-UV350

Applicant's name : Siyata Mobile Inc.

Address of applicant..... : 1001 Lenoir St Suite A, Montreal, Quebec H4C 2Z6 Canada

Test Firm..... : Shenzhen CTL Testing Technology Co., Ltd.

Address of Test Firm : Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road,
Nanshan District, Shenzhen, China 518055

Test specification..... :

Standard : FCC CFR Title 47 Part 2, Part 22H and Part 24E
ANSI C63.26-2015
RSS-132 issue 3/RSS-133 issue 6

TRF Originator : Shenzhen CTL Testing Technology Co., Ltd.

Master TRF..... : Dated 2011-01

Date of Receipt..... : Sep. 27, 2017

Date of Test Date..... : Sep. 28, 2017 –Nov. 19, 2017

Data of Issue..... : Nov. 20, 2017

Result..... : Pass

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TEST REPORT

Test Report No. : CTL1708188063-WF01	Nov. 20, 2017
	Date of issue

Equipment under Test : Vehicle Communicator

Model /Type : UV350

Listed Models : N/A

Applicant : **Siyata Mobile Inc.**

Address : 1001 Lenoir St Suite A, Montreal, Quebec H4C 2Z6 Canada

Manufacturer : **Siyata Mobile Inc.**

Address : 1001 Lenoir St Suite A, Montreal, Quebec H4C 2Z6 Canada

Test result	Pass *
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* In the configuration tested, the EUT complied with the standards specified page 5.

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

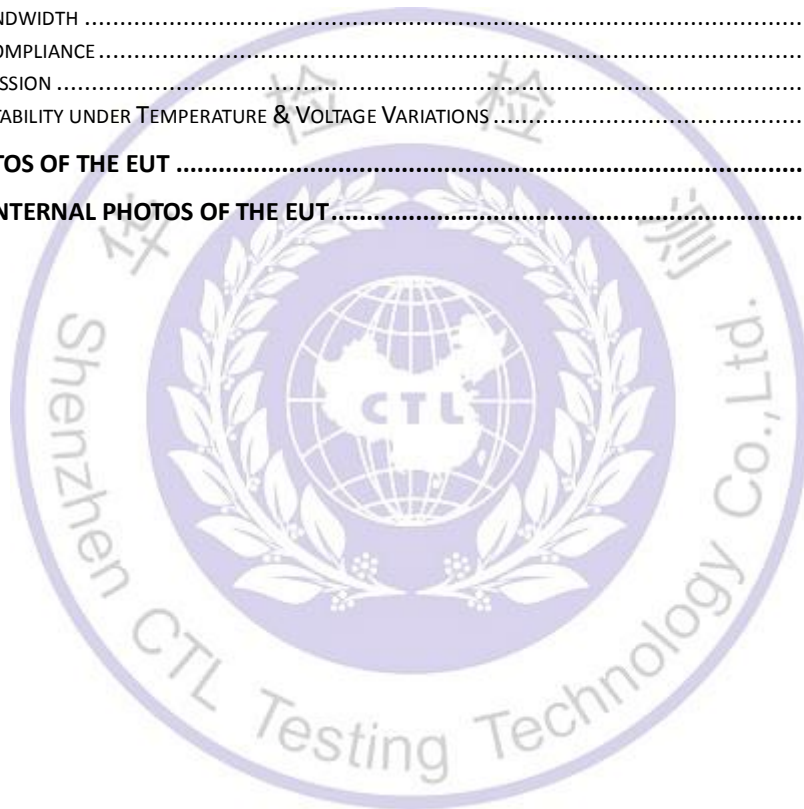
**** Modified History ****

Revisions	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2017-11-20	CTL1708188063-WF01	Tracy Qi



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1 SUMMARY

1.1 TEST STANDARDS

The tests were performed according to following standards:

[RSS-Gen Issue 4](#): General Requirements for Compliance of Radio Apparatus

[RSS-132 Issue 3](#): Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

[RSS-133 Issue 6](#): 2 GHz Personal Communications Services

[SRSP-503 RSS-133 Issue 7](#): Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

[SRSP-510 Issue 5](#): Technical Requirements for Personal Communications Services (PCS) in the Bands 1850-1915 MHz and 1930-1995 MHz

[FCC Part 22](#): PRIVATE LAND MOBILE RADIO SERVICES.

[FCC Part 24](#): PUBLIC MOBILE SERVICES

[FCC Part 2](#): FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[TIA/EIA 603 D June 2010](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[ANSI C63.10-2013](#) Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

[ANSI C63.26-2015](#) American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

1.2 Test Description

Test Item	Section of Regulations	Result
RF Output Power	Part 2.1046/Part 22.913 (a)(5)/ Part 24.232 (c) RSS-132(5.4)/ RSS-133(6.4)	Pass Refer to section 3.1
Peak-to-Average Ratio	Part 24.232 (d) RSS-132(5.4)/ RSS-133(6.4)	Pass Refer to section 3.1
99% & -26 dB Occupied Bandwidth	Part 2.1049/Part 22.917/Part 24.238 RSS-GEN 6.6/RSS-133(2.3)	Pass Refer to section 3.2
Out of band emission, Band Edge	Part 22.917 (a)/ Part 24.238 (a) RSS-132(5.6)/ RSS-133(6.5)	Pass Refer to section 3.3
Spurious Emissions at Antenna Terminal	Part 2.1051/Part 22.917 (a)/ Part 24.238 (a) RSS-132(5.6)/ RSS-133(6.5)	Pass Refer to section 3.4
Field Strength of Spurious Radiation	Part 2.1053/Part 22.917 (a)/ Part 24.238 (a) RSS-132(5.6)/ RSS-133(6.5)	Pass Refer to section 3.4
Frequency stability	Part 2.1055/Part 22.355/Part 24.235 RSS-132(5.3)/ RSS-133(6.3)	Pass Refer to section 3.5

1.3 Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 32/EN 55032 requirements.

1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December 19, 2013.

1.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	Above 1GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2 GENERAL INFORMATION

2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2 General Description of EUT

Product Name:	Vehicle Communicator
Model/Type reference:	UV350
Power supply:	DC 12V form battery
2G	
Operation Band:	GSM850, PCS1900
Supported Type:	GSM/GPRS/EGPRS
Power Class:	GSM850: Power Class 4 PCS1900: Power Class 1
Modulation Type:	GMSK for GPRS, 8-PSK for EGPRS
GSM Release Version	R99
GPRS Multislot Class	12
EGPRS Multislot Class	12
Antenna type:	External antenna
Antenna gain:	1.5dBi for GSM850 2.0dBi for PCS1900
WCDMA	
Operation Band:	FDD Band II, FDD Band V
Power Class:	Power Class 3
Modulation Type:	QPSK for HSUPA/HSDPA
WCDMA Release Version:	Rel-5
HSDPA Category:	Category 14
HSUPA Category:	Category 6
Antenna type:	External antenna
Antenna gain:	1.5dBi for Band V 2.0dBi for Band II

Note: For more details, refer to the user's manual of the EUT.

2.3 Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The CUM200 used to control the EUT staying in continuous transmitting and receiving mode for testing. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

Test Frequency:

GSM 850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
190	836.60	661	1880.00
251	848.80	810	1909.80

FDD Band II		FDD Band V	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
9262	1852.4	4132	826.40
9400	1880.0	4182	836.60
9538	1907.6	4233	846.60

Test Modes:

The test mode(s) are selected according to relevant radio technology specifications.

Test Mode	Test Modes Description
Mode 1	GSM system, GSM, GMSK modulation
Mode 2	GSM system, GPRS, GMSK modulation
Mode 3	GSM system, EDGE, GMSK modulation
Mode 4	WCDMA system, QPSK modulation
Mode 5	HSDPA system, QPSK modulation
Mode 6	HSUPA system, QPSK modulation

Note:

1. As GPRS and GSM with the same emission designator, test result recorded in this report at the worst case Mode 1 only after exploratory scan.
2. As HSDPA and HSUPA with the same emission designator, test result recorded in this report at the worst case Mode 4 with RCM 12.2Kbps only after exploratory scan.

2.4 Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2017/06/02	2018/06/01
Bilog Antenna	Sunol Sciences Corp.	JB1	A061714	2017/06/02	2018/06/01
EMI Test Receiver	R&S	ESCI	103710	2017/06/02	2018/06/01
Spectrum Analyzer	Agilent	N9020	US46220290	2017/01/17	2018/01/16
Controller	EM Electronics	Controller EM 1000	N/A	2017/05/21	2018/05/20
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2017/05/19	2018/05/18
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062014	2017/05/19	2018/05/18
Active Loop Antenna	SCHWARZBEC K	FMZB1519	1519-037	2017/05/19	2018/05/18
Amplifier	Agilent	8349B	3008A02306	2017/05/19	2018/05/18
Amplifier	Agilent	8447D	2944A10176	2017/05/19	2018/05/18
Temperature/Humidity Meter	Gangxing	CTH-608	02	2017/05/20	2018/05/19
Radio Communication Tester	R&S	CMU200	115419	2017/05/22	2018/05/21
High-Pass Filter	K&L	9SH10-2700/X1 2750-O/O	N/A	2017/05/20	2018/05/19
High-Pass Filter	K&L	41H10-1375/U1 2750-O/O	N/A	2017/05/20	2018/05/19
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	2017/06/02	2018/06/01
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2017/06/02	2018/06/01
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2017/06/02	2018/06/01
RF Cable	Megalon	RF-A303	N/A	2017/06/02	2018/06/01
Climate Chamber	ESPEC	EL-10KA	A20120523	2017/05/20	2018/05/19
SIGNAL GENERATOR	Agilent	E4421B	US40051744	2017/05/20	2018/05/19
Directional Coupler	Agilent	87300B	3116A03638	2017/05/20	2018/05/19

2.5 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with of FCC Part 22 Subpart H, Part 24 Subpart E, RSS 132 and RSS 133 Rules.

2.6 Modifications

No modifications were implemented to meet testing criteria.

3 TEST CONDITIONS AND RESULTS

3.1 Output Power

LIMIT

FCC:

GSM850/WCDMA Band V: 7W ERP

PCS1900/WCDMA Band II: 2W EIRP

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

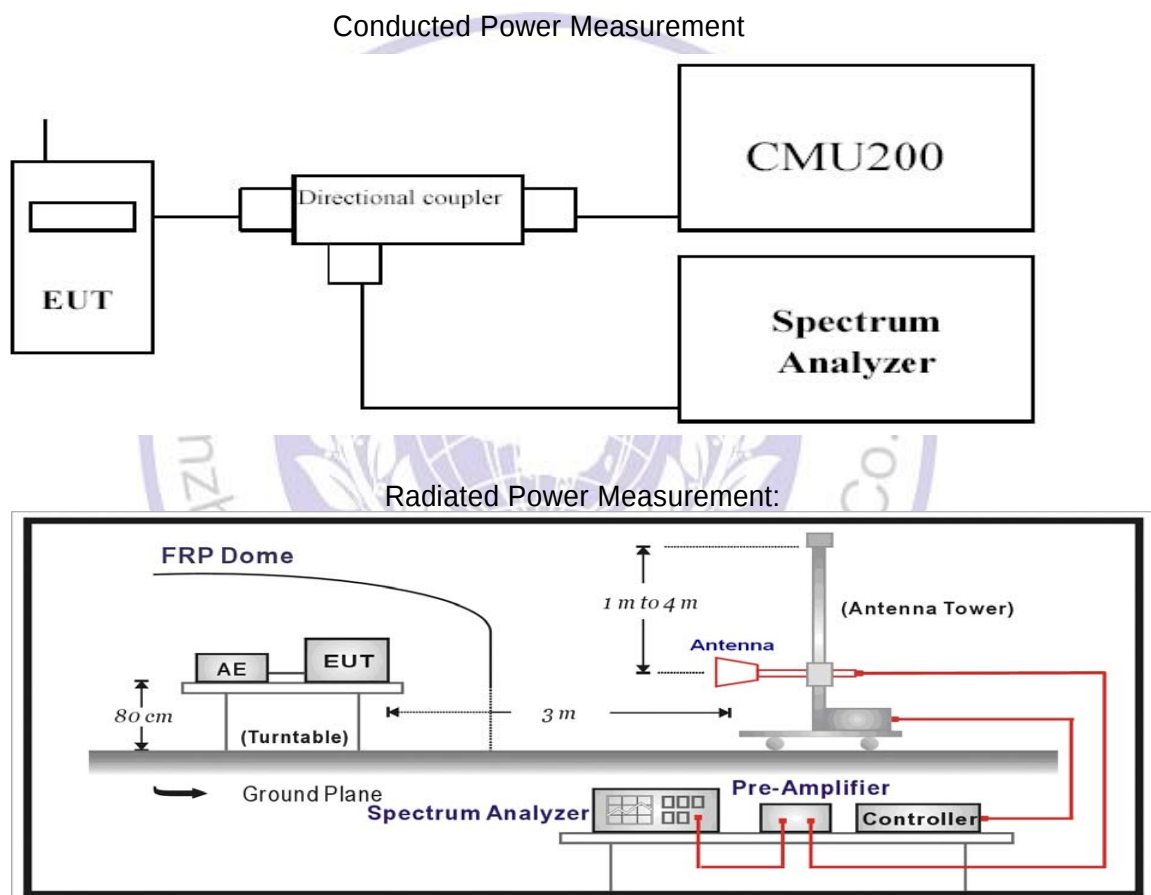
IC:

GSM850/WCDMA Band V: ≤ 11.5 W ERIP

PCS1900/WCDMA Band II: ≤ 2 W EIRP

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Conducted Power Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- EUT Communicate with CMU200 then selects a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

- a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c) The output of the test antenna shall be connected to the measuring receiver.
- d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h) The maximum signal level detected by the measuring receiver shall be noted.
- i) The transmitter shall be replaced by a substitution antenna.
- j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k) The substitution antenna shall be connected to a calibrated signal generator.
- l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

TEST RESULTS**Conducted Measurement:**

EUT Mode	Channel	Frequency (MHz)	Avg.Burst Power (dBm)	Peak-to-Average Ratio (dB)	Result
GSM850 (GMSK,1Slot)	128	824.20	32.54	0.56	Pass
	190	836.60	32.74	0.87	
	251	848.80	32.63	0.41	
GPRS850 (GMSK,1Slot)	128	824.20	32.62	0.26	Pass
	190	836.60	32.71	0.65	
	251	848.80	32.56	0.45	
EGPRS850 (8PSK,1Slot)	128	824.20	26.76	0.66	Pass
	190	836.60	26.69	0.78	
	251	848.80	26.73	0.85	
GSM1900 (GMSK,1Slot)	512	1850.20	30.05	0.45	Pass
	661	1880.00	30.11	0.56	
	810	1909.80	30.10	0.89	
GPRS1900 (GMSK,1Slot)	512	1850.20	30.21	0.74	Pass
	661	1880.00	30.12	0.63	
	810	1909.80	30.19	0.52	
EGPRS1900 (8PSK,1Slot)	512	1850.20	24.74	0.36	Pass
	661	1880.00	24.65	0.74	
	810	1909.80	24.62	0.52	
HSDPA Band II (QPSK)	9262	1852.40	23.56	3.74	Pass
	9400	1880.00	23.69	3.63	
	9538	1907.60	23.58	3.42	
HSUPA Band V (QPSK)	4132	826.40	23.22	3.33	Pass
	4183	836.60	23.45	3.45	
	4233	846.60	23.71	3.26	

Radiated Measurement:

Note: 1. The field strength of radiation emission was measured in the following position: EUT stand-up position (Zaxis), lie-down position (X, Y axis). The data show in this report only with the worst case setup. After exploratory measurement the worst case of Z axis was reported.

Note: 2 We test the H direction and V direction and V direction is worse.

GSM850

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Correction (dB)	P _{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	-9.18	2.42	8.45	2.15	36.82	31.52	38.45	6.93	V
190	-8.98	2.46	8.45	2.15	36.82	31.68	38.45	6.77	V
251	-9.08	2.53	8.36	2.15	36.82	31.42	38.45	7.03	V

GPRS850

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Correction (dB)	P _{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	-10.25	2.42	8.45	2.15	36.82	30.45	38.45	8.00	V
190	-9.00	2.46	8.45	2.15	36.82	31.66	38.45	6.79	V
251	-8.93	2.53	8.36	2.15	36.82	31.57	38.45	6.88	V

EGPRS850

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Correction (dB)	P _{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	-13.14	2.42	8.45	2.15	36.82	27.56	38.45	10.89	V
190	-12.88	2.46	8.45	2.15	36.82	27.78	38.45	10.67	V
251	-12.87	2.53	8.36	2.15	36.82	27.63	38.45	10.82	V

GSM1900

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	-9.18	3.41	10.24	33.6	31.25	33.01	1.76	V
661	-8.83	3.49	10.24	33.6	31.52	33.01	1.49	V
810	-8.86	3.55	10.23	33.6	31.42	33.01	1.59	V

GPRS1900

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	-9.38	3.41	10.24	33.6	31.05	33.01	1.96	V
661	-9.09	3.49	10.24	33.6	31.26	33.01	1.75	V
810	-9.10	3.55	10.23	33.6	31.18	33.01	1.83	V

EGPRS1900

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	-14.78	3.41	10.24	33.6	25.65	33.01	7.36	V
661	-14.23	3.49	10.24	33.6	26.12	33.01	6.89	V
810	-14.41	3.55	10.23	33.6	25.87	33.01	7.14	V

WCDMA BAND II

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
9262	-15.28	3.42	10.24	33.6	25.14	33.01	7.87	V
9400	-15.61	3.49	10.24	33.6	24.74	33.01	8.27	V
9538	-14.90	3.54	10.23	33.6	25.39	33.01	7.62	V

WCDMA BAND V

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Correction (dB)	P _{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4132	-16.37	2.43	8.45	2.15	36.82	24.32	38.45	14.13	V
4183	-16.33	2.46	8.45	2.15	36.82	24.33	38.45	14.12	V
4233	-15.80	2.52	8.36	2.15	36.82	24.71	38.45	13.74	V

Remark:

1. $EIRP = P_{Mea}(dBm) - P_{cl}(dB) + P_{Ag}(dB) + G_a(dBi)$
2. $ERP = EIRP - 2.15dBi$ as EIRP by subtracting the gain of the dipole.

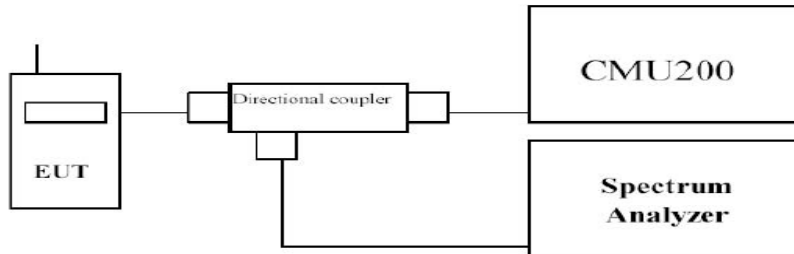


3.2 Occupied Bandwidth

LIMIT

N/A

TEST CONFIGURATION



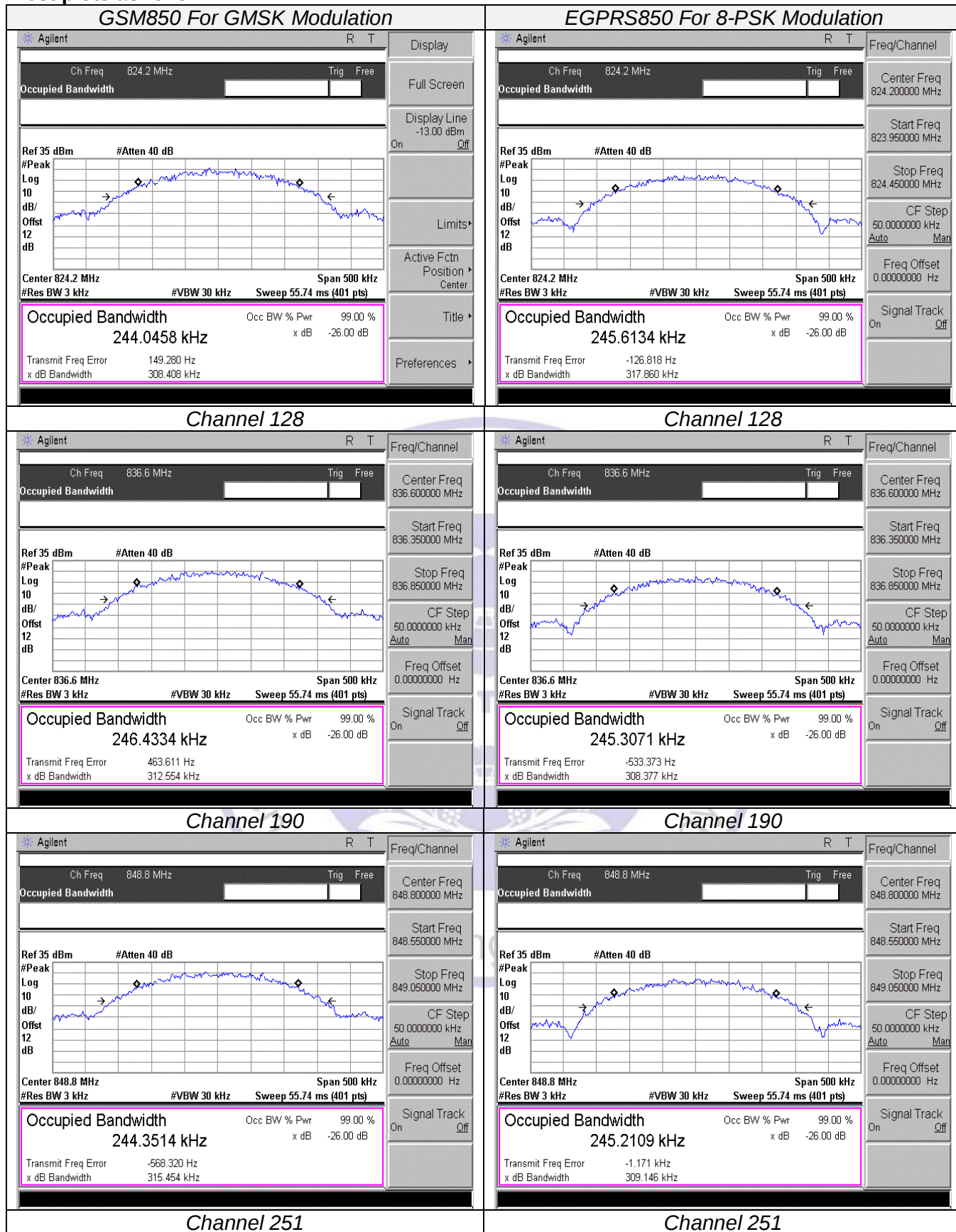
TEST PROCEDURE

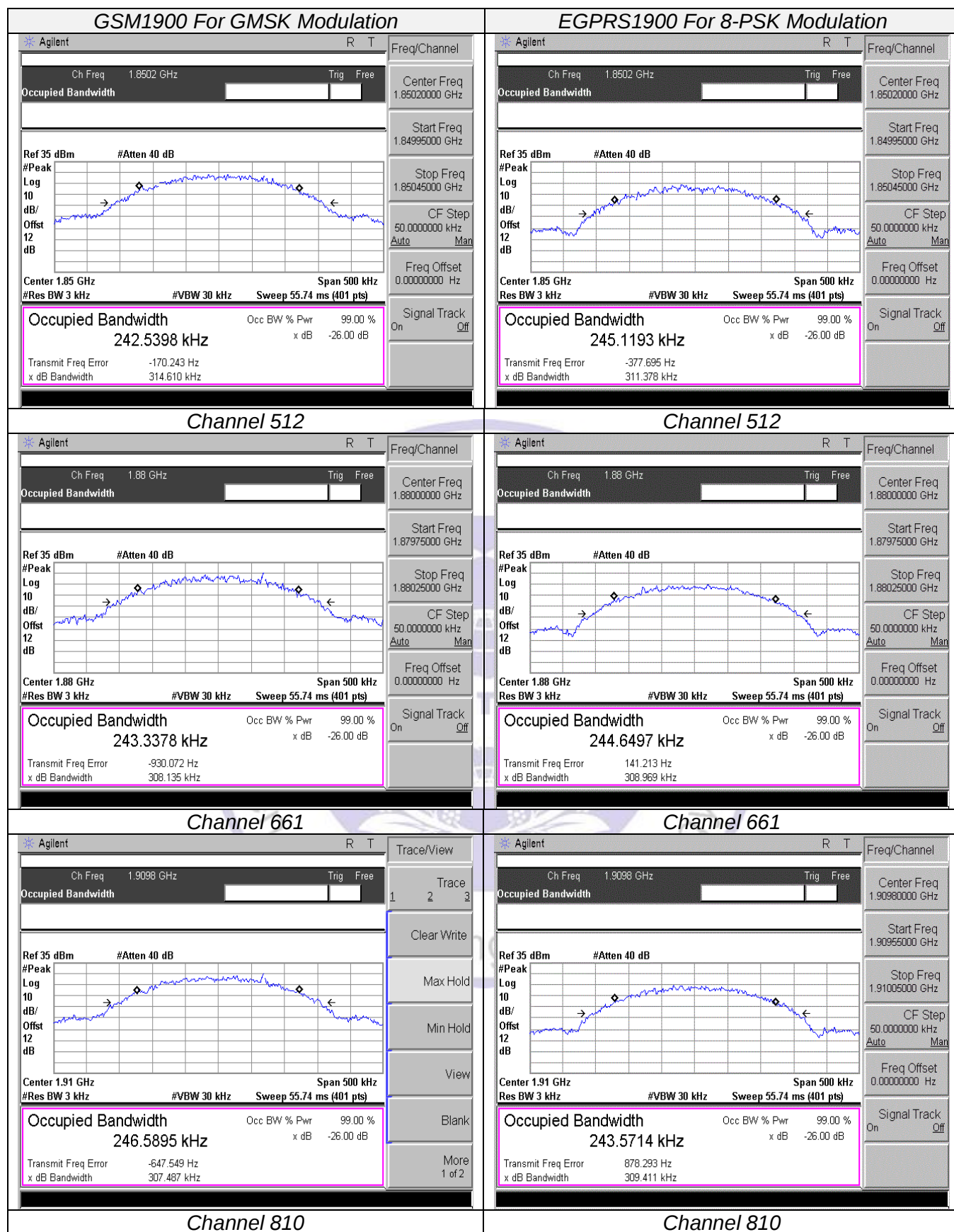
1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer
2. RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW.
3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

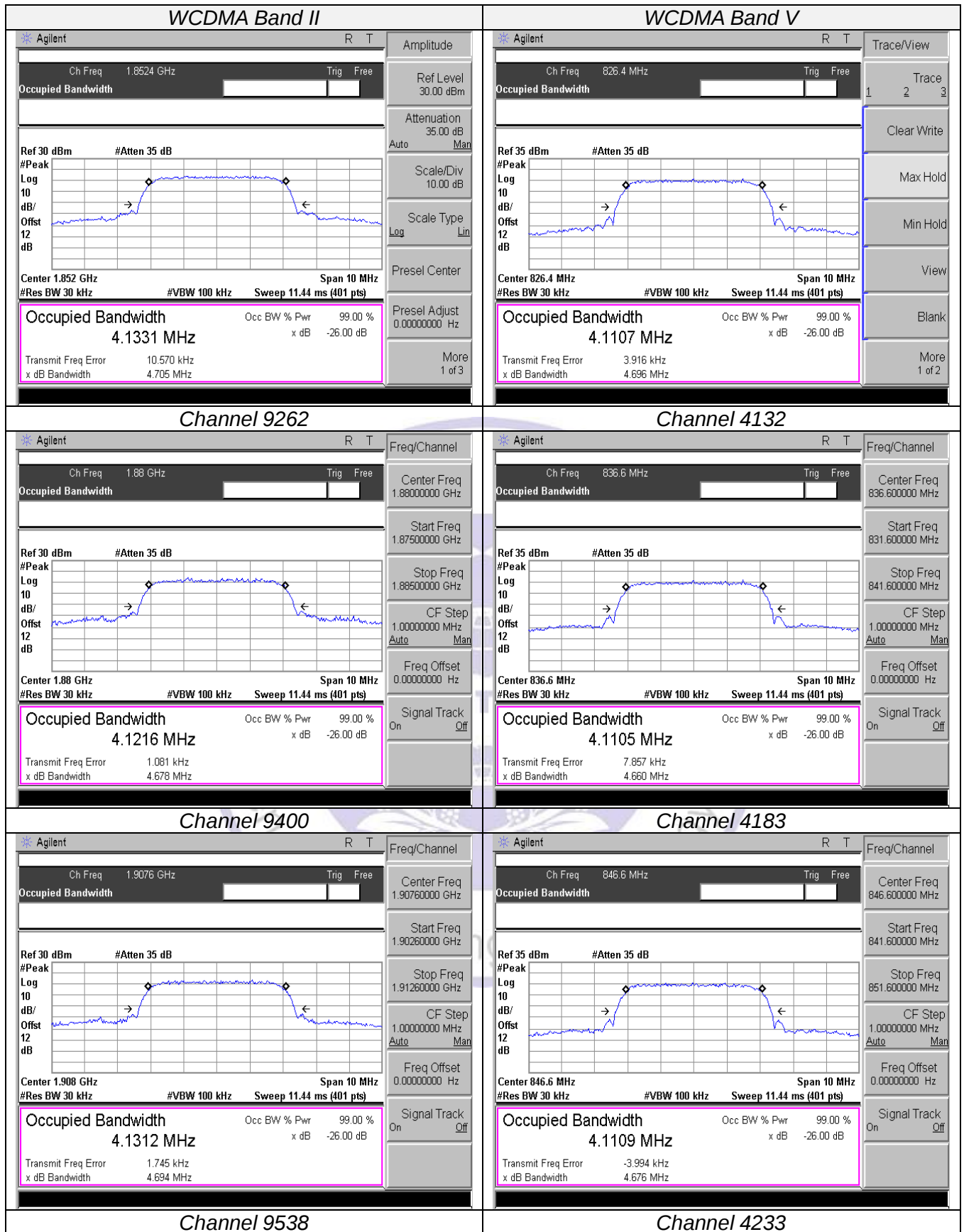
TEST RESULTS

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM850 (GMSK,1Slot)	128	824.20	244.05	308.41
	190	836.60	246.43	312.55
	251	848.80	244.35	315.45
EGPRS850 (8PSK,1Slot)	128	824.20	245.61	317.86
	190	836.60	245.31	308.38
	251	848.80	245.21	309.15
GSM1900 (GMSK,1Slot)	512	1850.20	242.54	314.61
	661	1880.00	243.34	308.14
	810	1909.80	246.59	307.49
EGPRS1900 (8PSK,1Slot)	512	1850.20	245.12	311.38
	661	1880.00	244.65	308.97
	810	1909.80	243.57	309.41
WCDMA Band II (QPSK)	9262	1852.4	4133.10	4705.00
	9400	1880.0	4121.60	4678.00
	9538	1907.6	4131.20	4694.00
WCDMA Band V (QPSK)	4132	826.4	4110.70	4696.00
	4183	836.6	4110.50	4660.00
	4233	846.6	4110.90	4676.00

Test plots as follow:





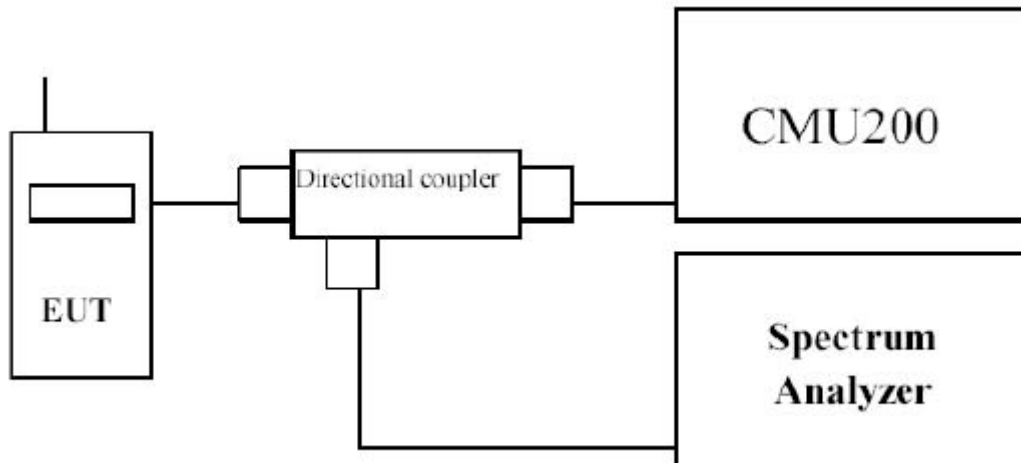


3.3 Band Edge compliance

LIMIT

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

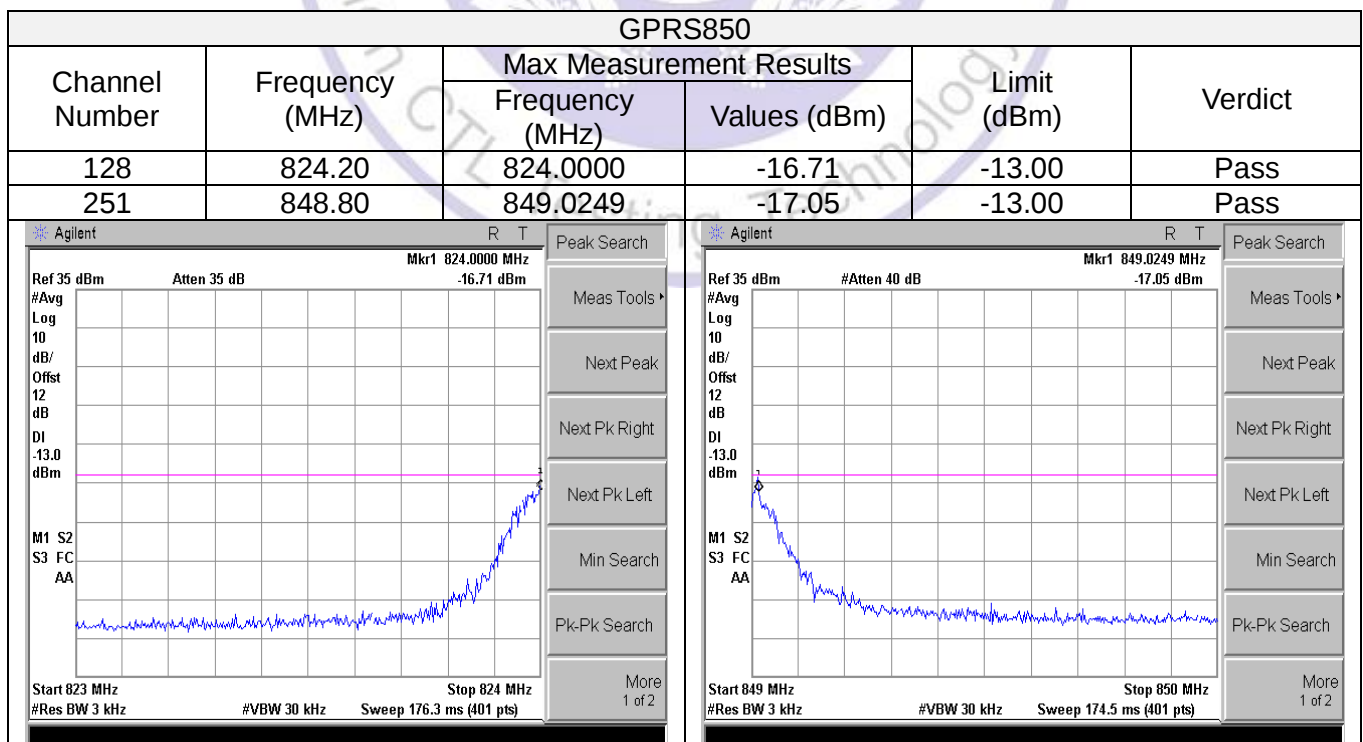
TEST CONFIGURATION

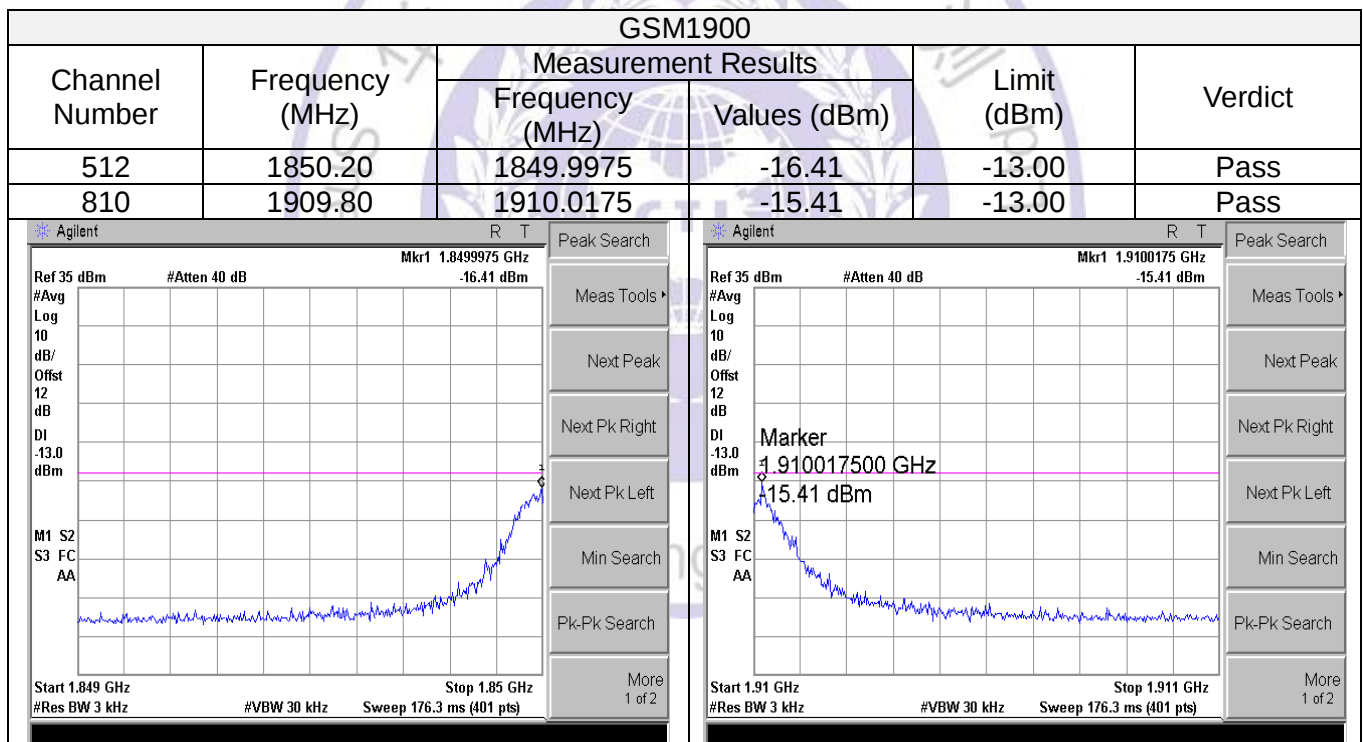
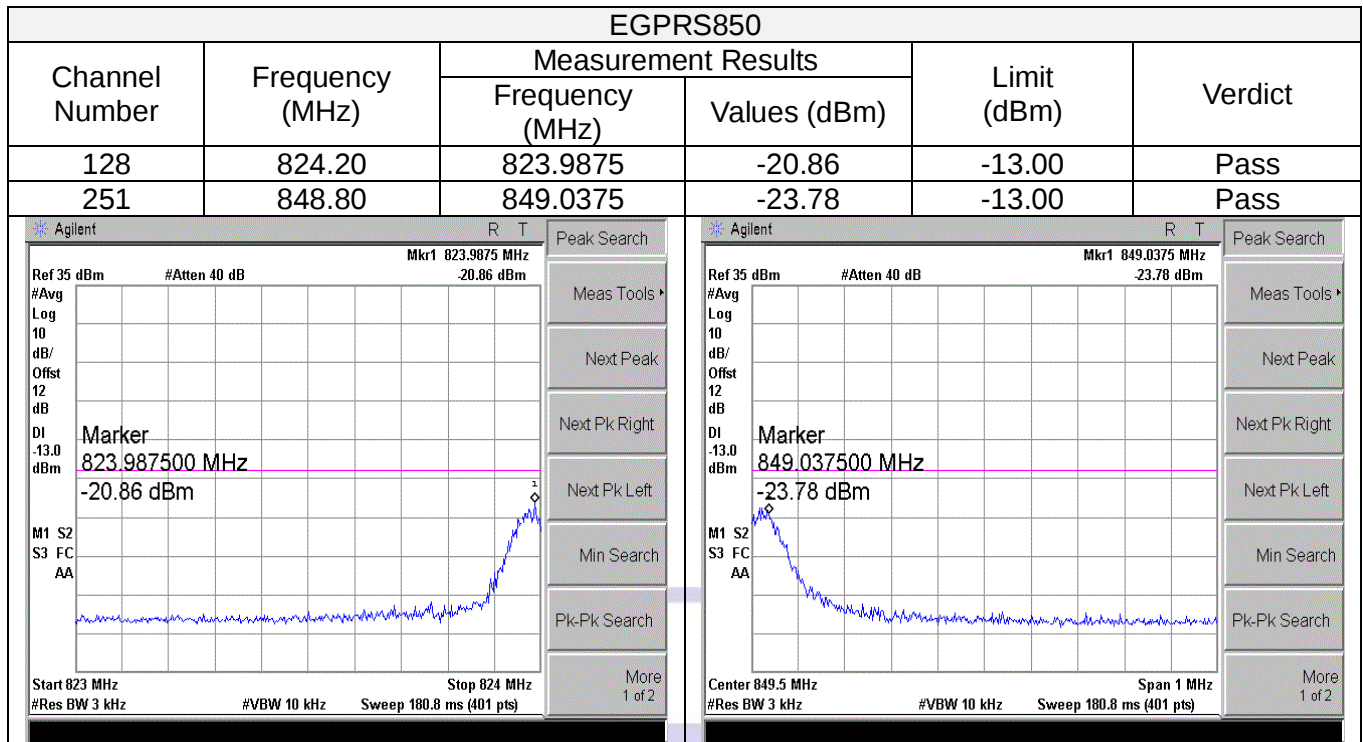


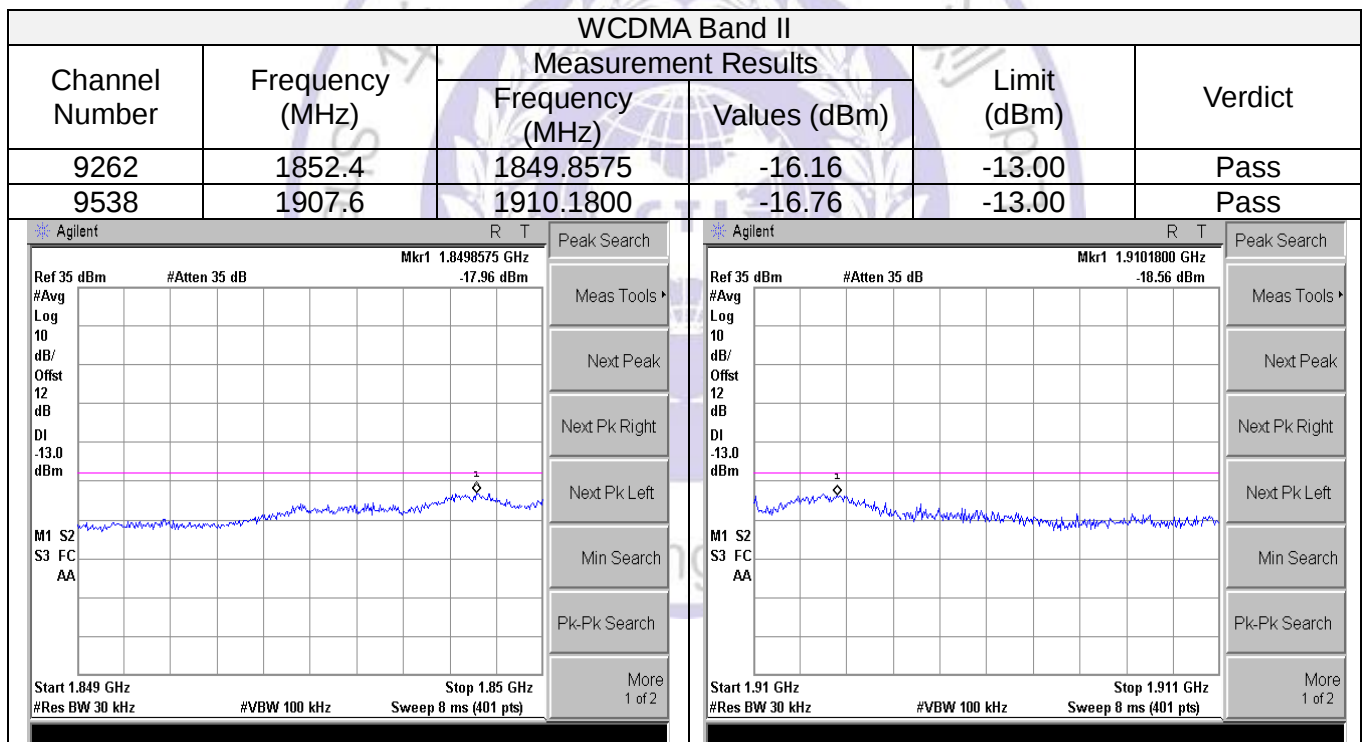
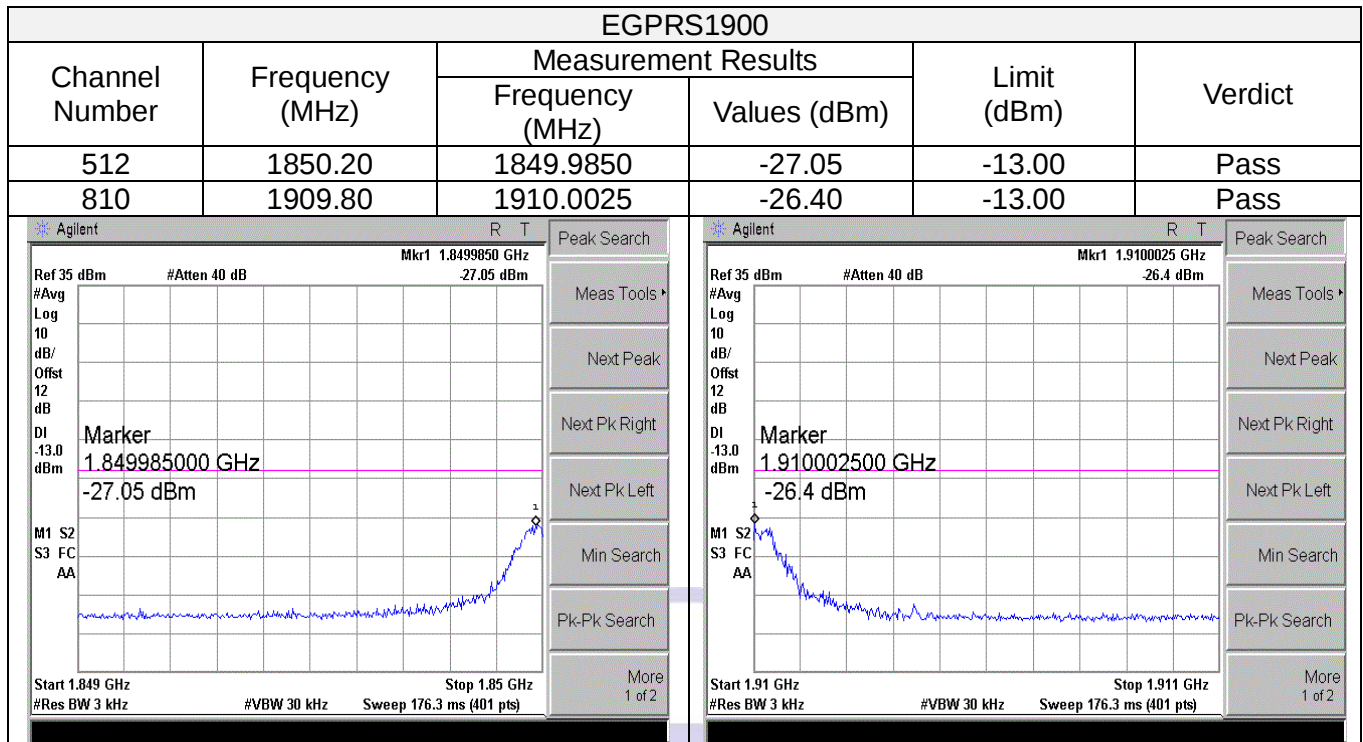
TEST PROCEDURE

In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

TEST RESULTS

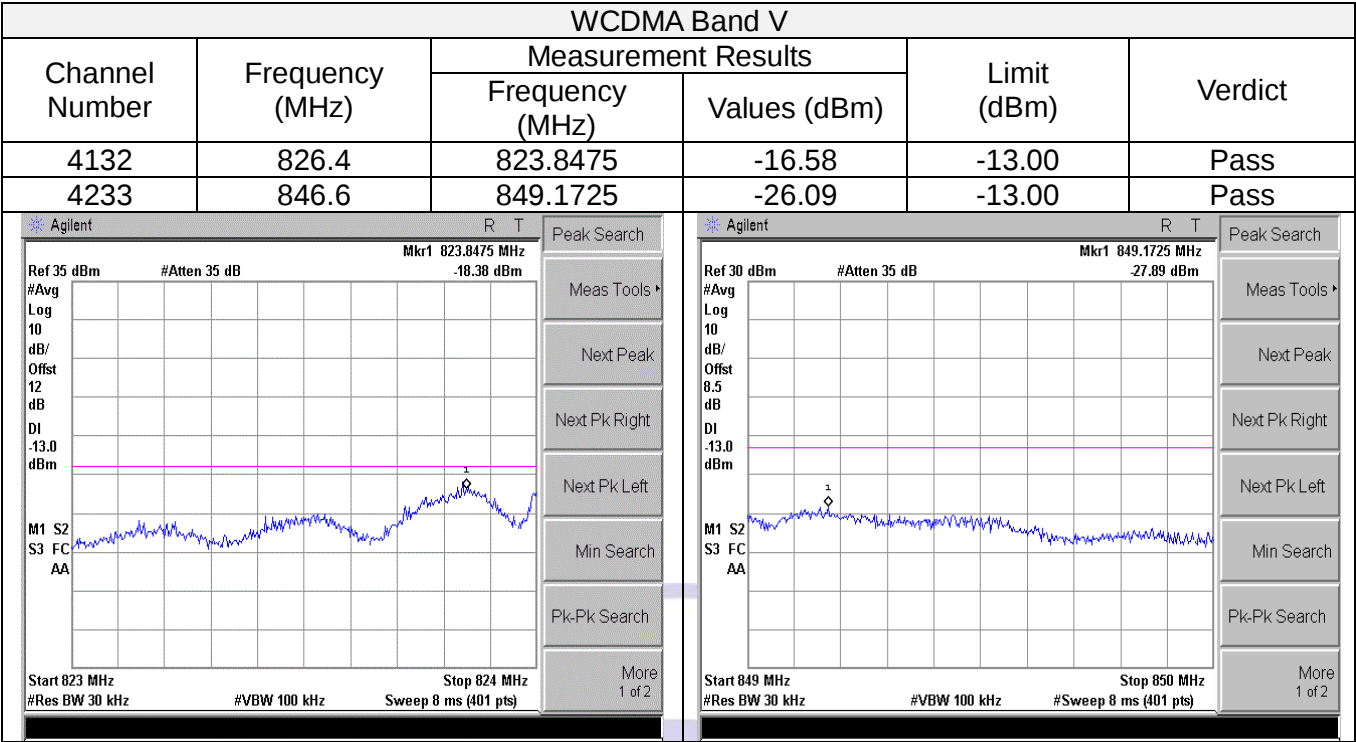






Bandwidth correction factor (BWCF) = $10\log(45/30) = 1.8$

Value = measured level+ 1.8



Bandwidth correction factor (BWCF) = $10\log(45/30) = 1.8$
Value = measured level+ 1.8



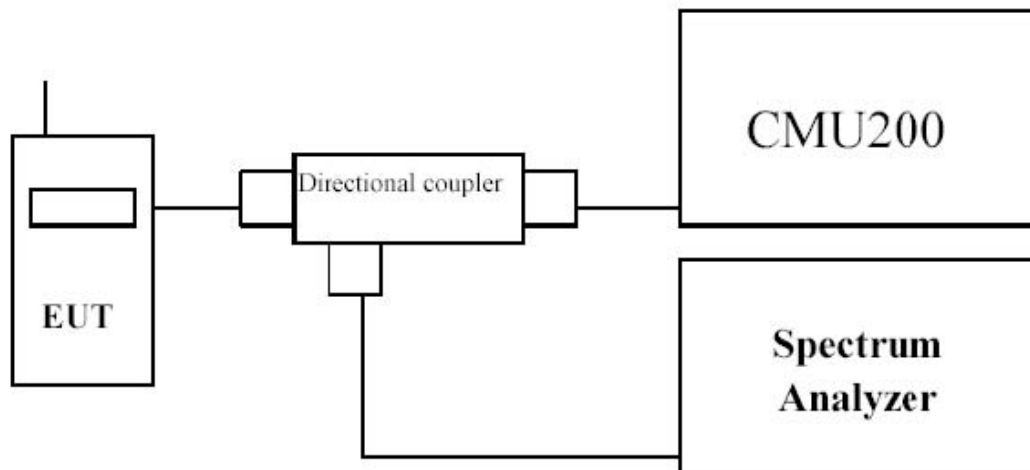
3.4 Spurious Emission

LIMIT

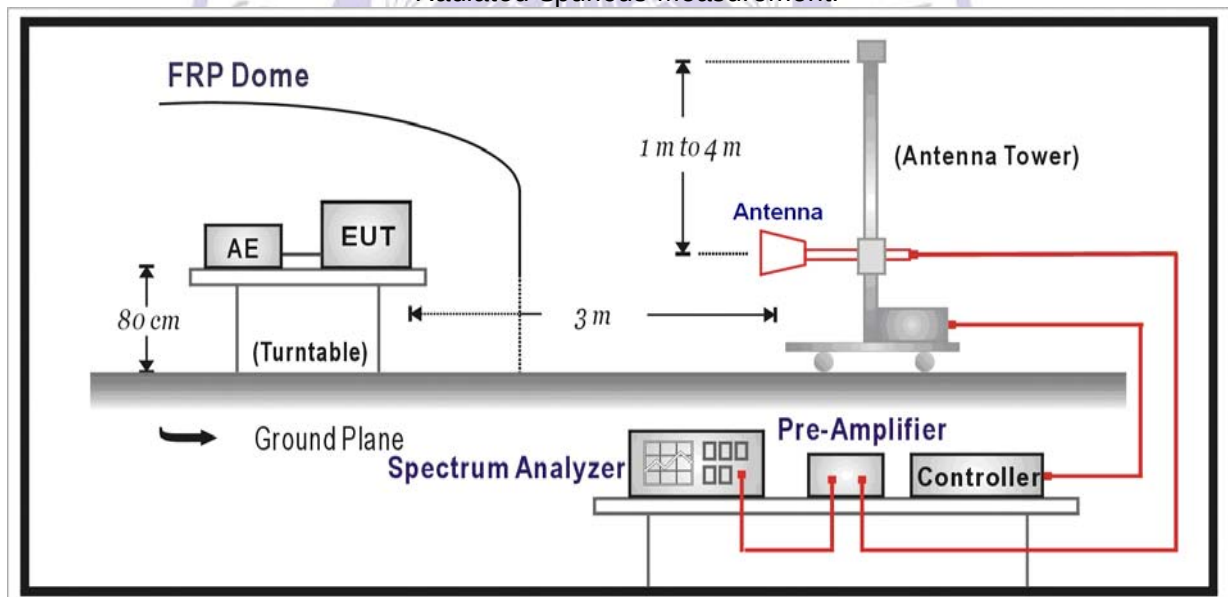
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

TEST CONFIGURATION

Conducted Spurious Measurement:



Radiated Spurious Measurement:



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Conducted Spurious Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- EUT Communicate with CMU200 then selects a channel for testing.

- d) Add a correction factor to the display of spectrum, and then test.
- e) The resolution bandwidth of the spectrum analyzer was set at 1MHz for Part 22 and 1MHz for Part 24, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

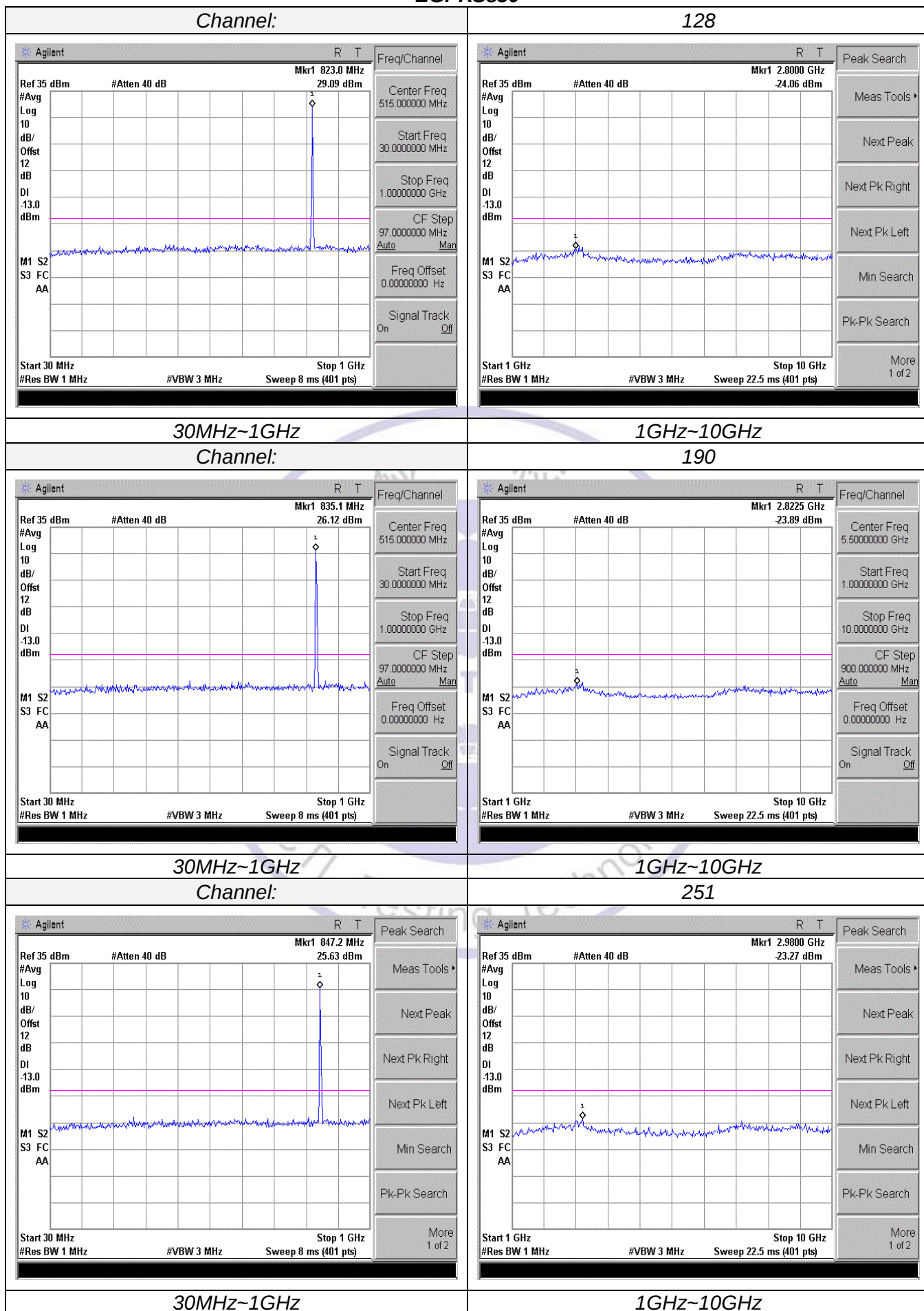
Radiated Spurious Measurement:

- a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c) The output of the test antenna shall be connected to the measuring receiver.
- d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h) The maximum signal level detected by the measuring receiver shall be noted.
- i) The transmitter shall be replaced by a substitution antenna.
- j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k) The substitution antenna shall be connected to a calibrated signal generator.
- l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q) The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24. The frequency range was checked up to 10th harmonic.

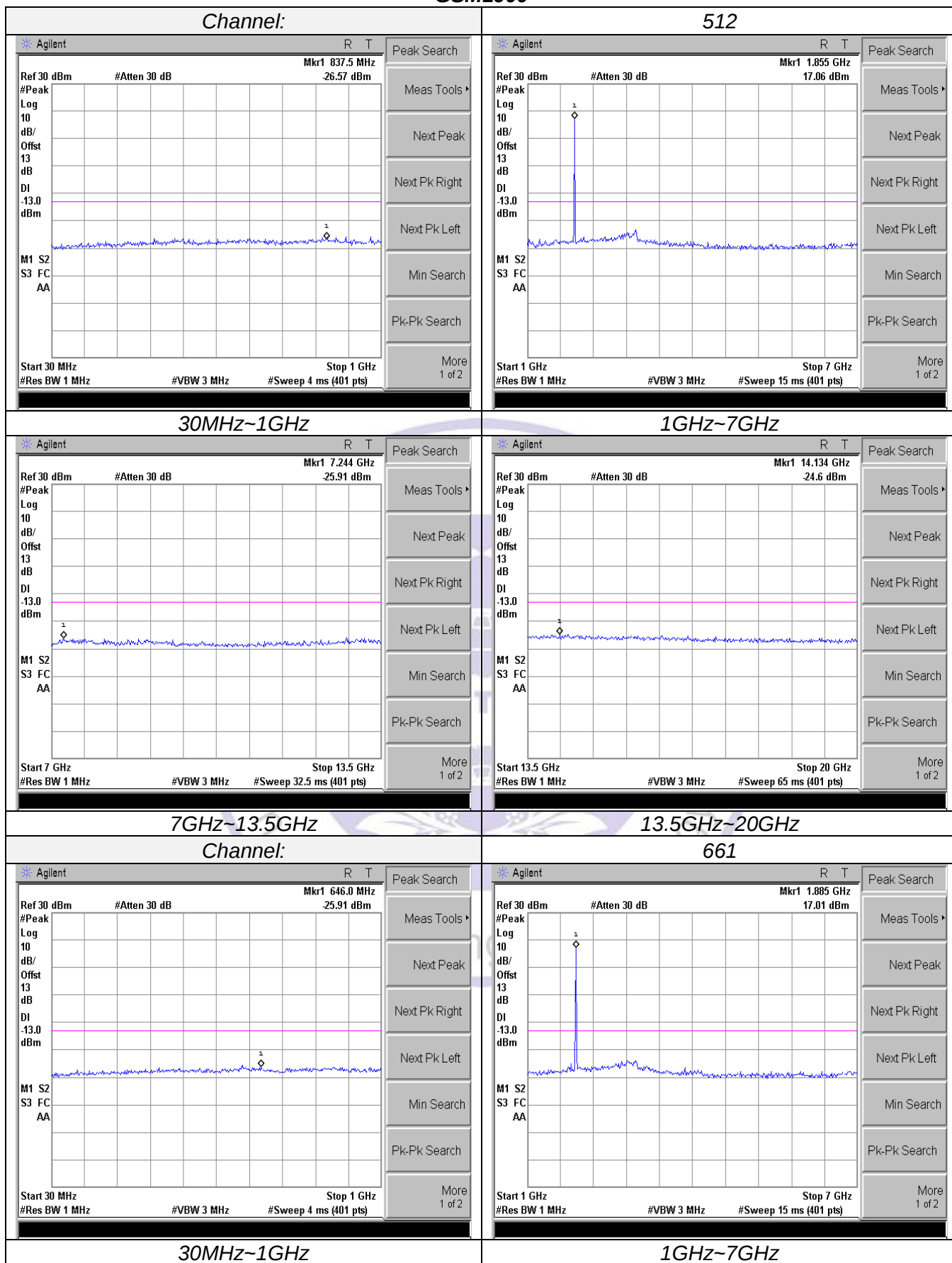
Conducted Measurement:

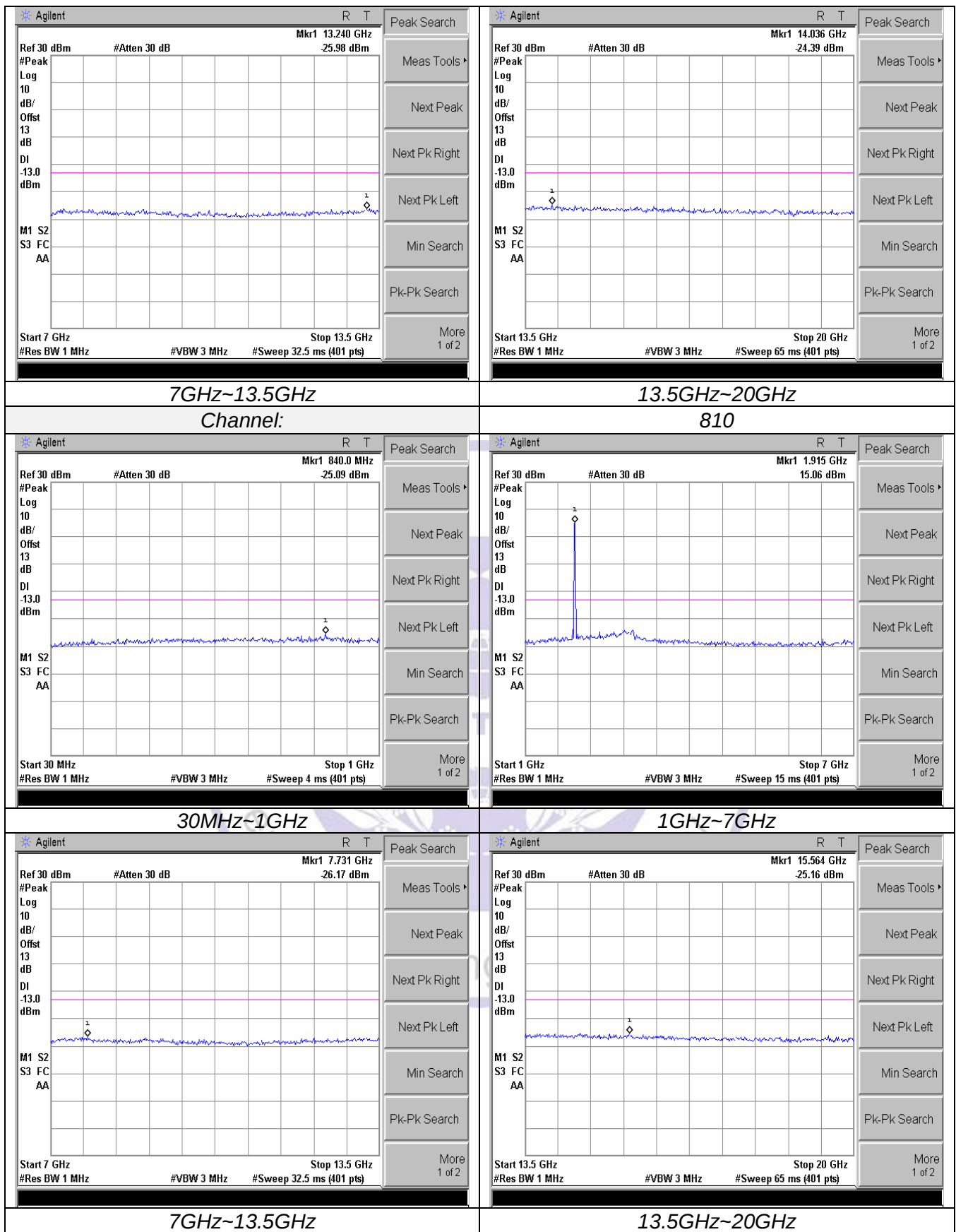
Channel:		128	
30MHz~1GHz		1GHz~10GHz	
Channel:		190	
30MHz~1GHz		1GHz~10GHz	
Channel:		251	
30MHz~1GHz		1GHz~10GHz	

EGPRS850

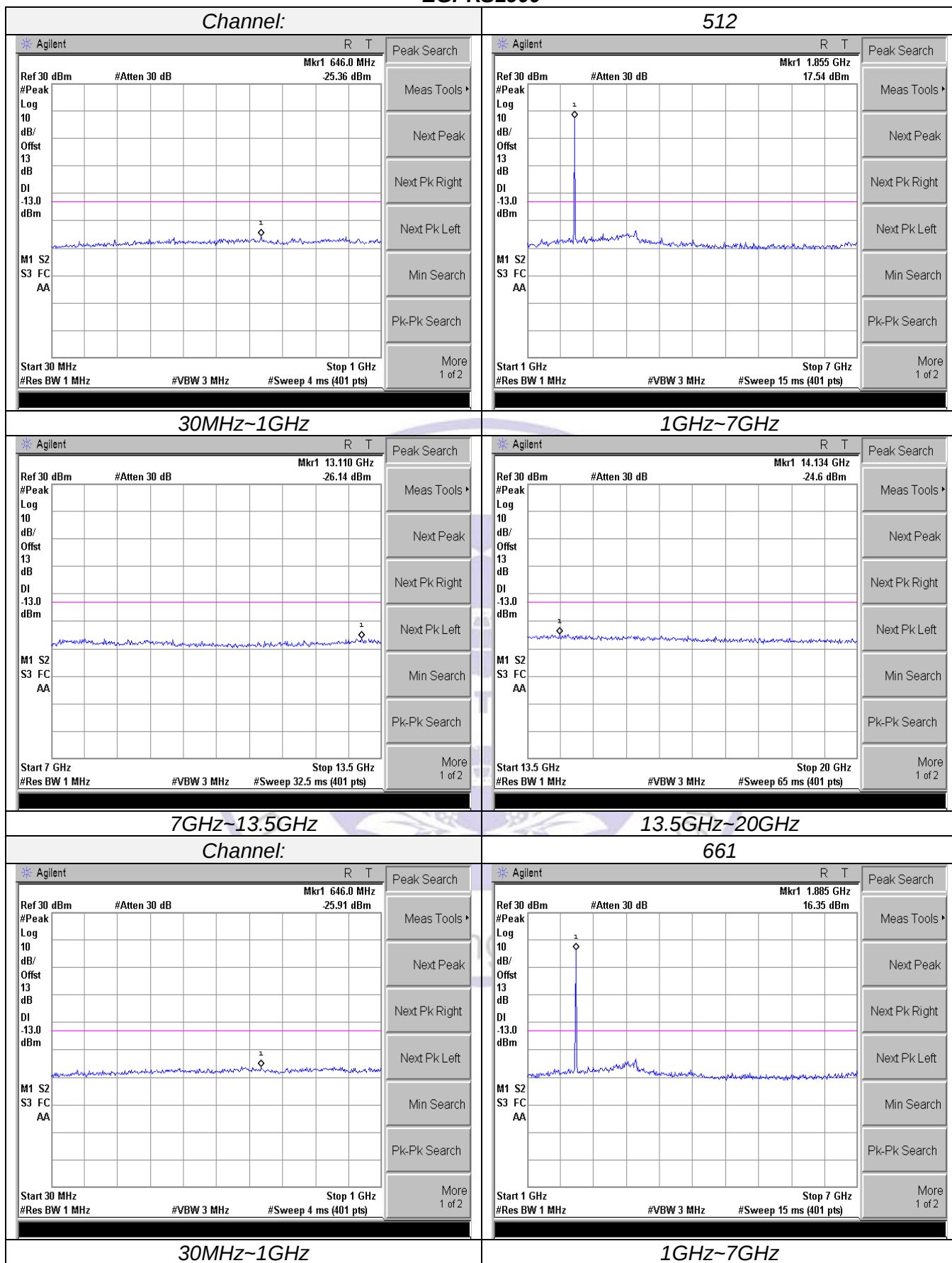


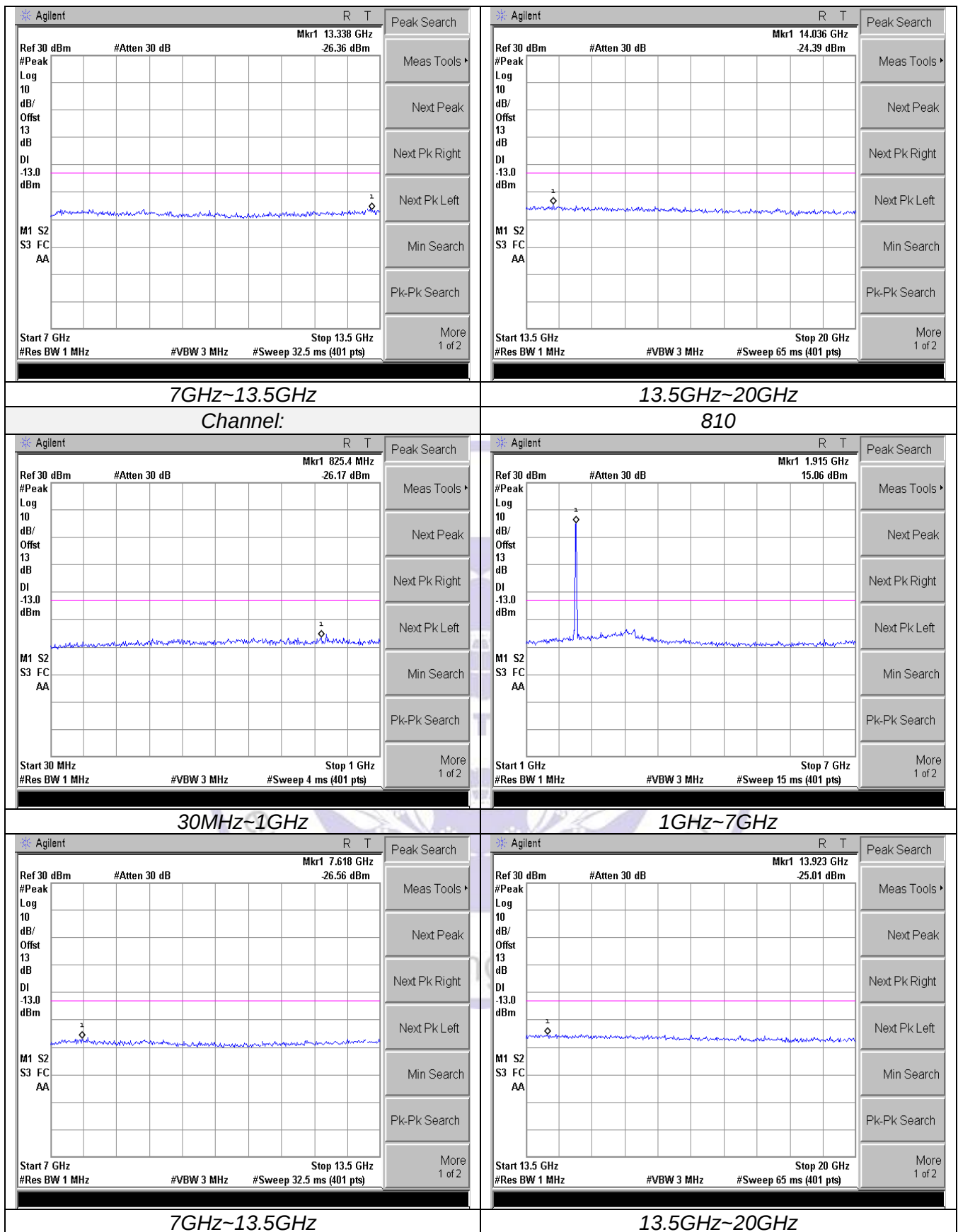
GSM1900



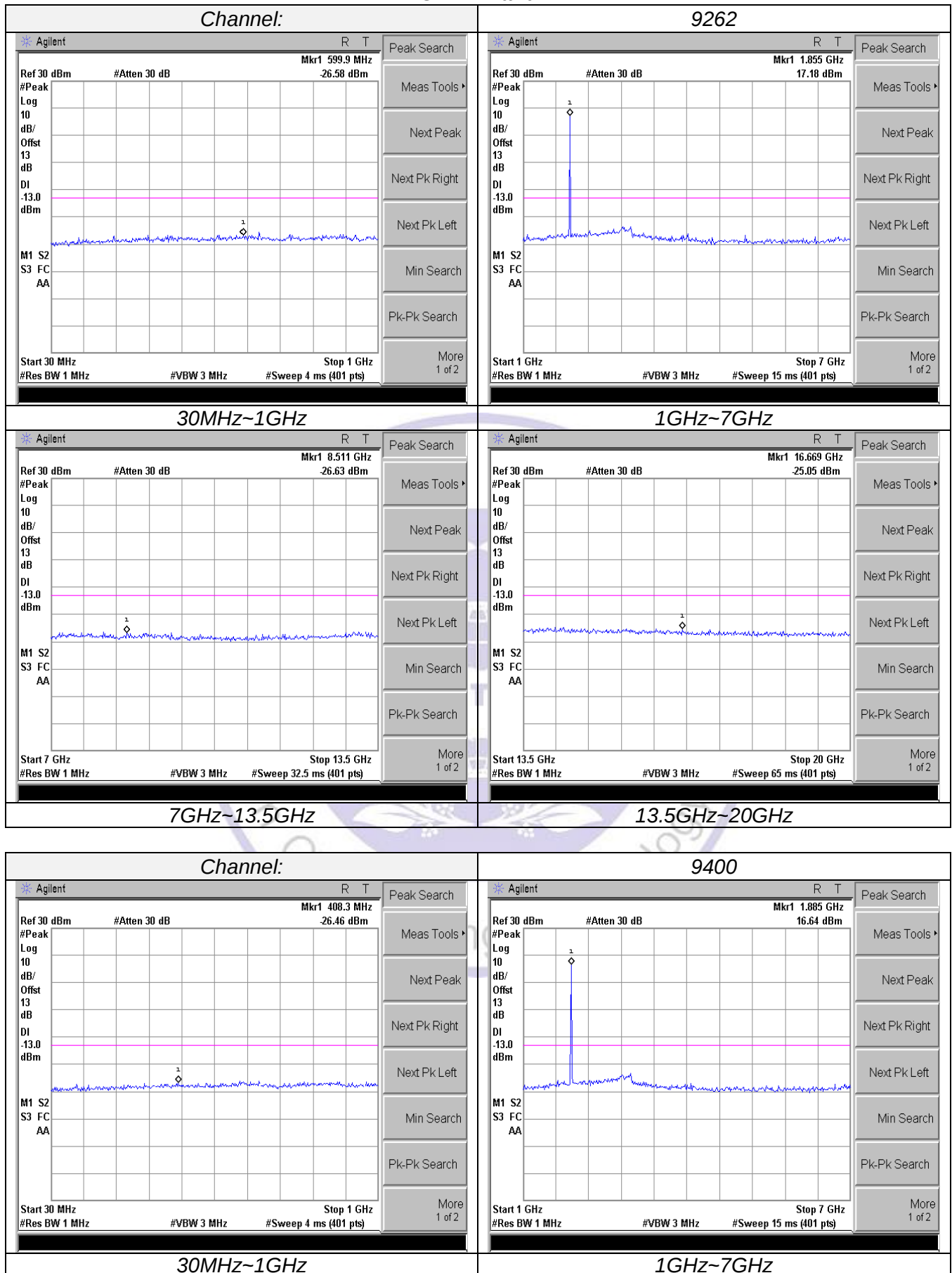


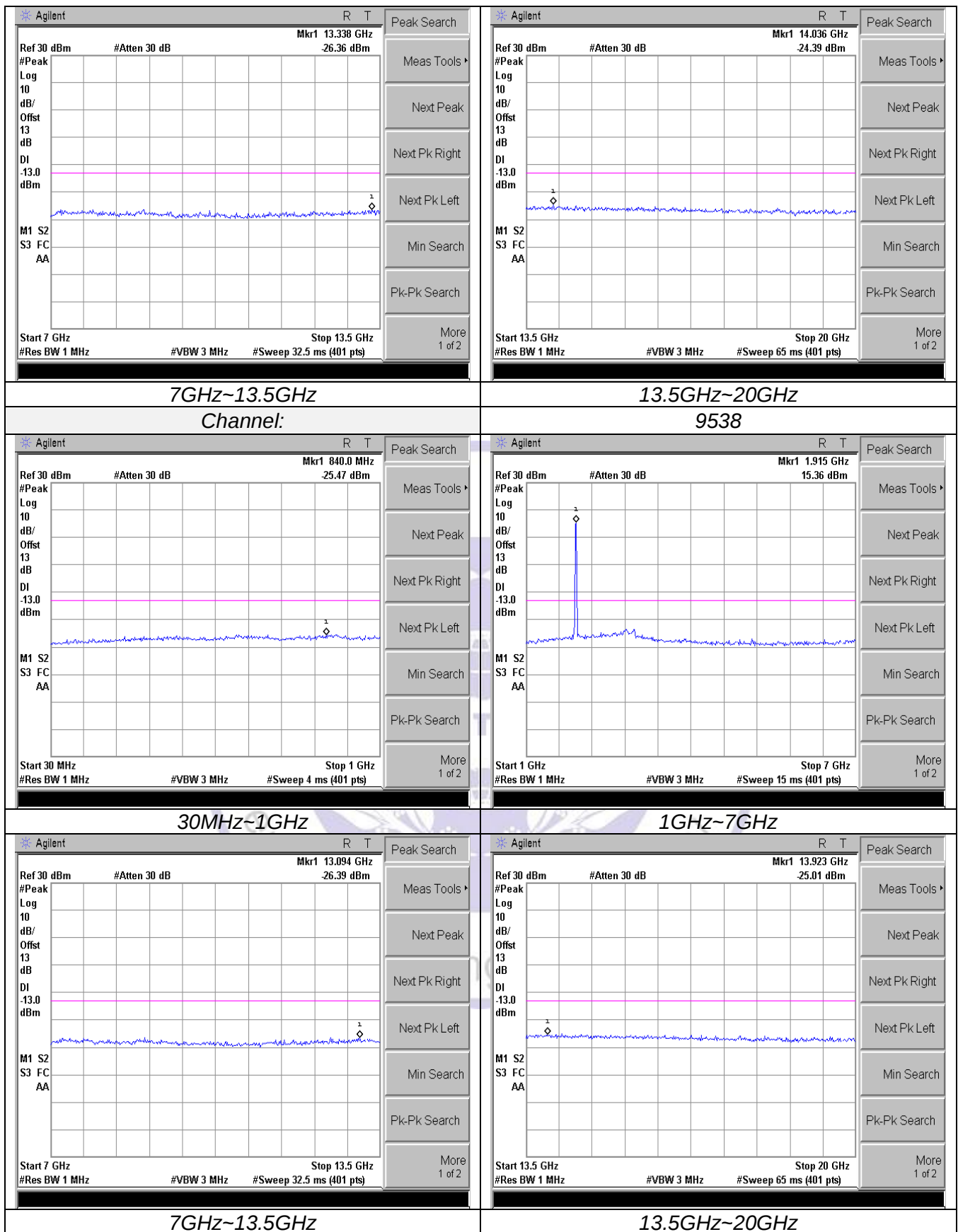
EGPRS1900



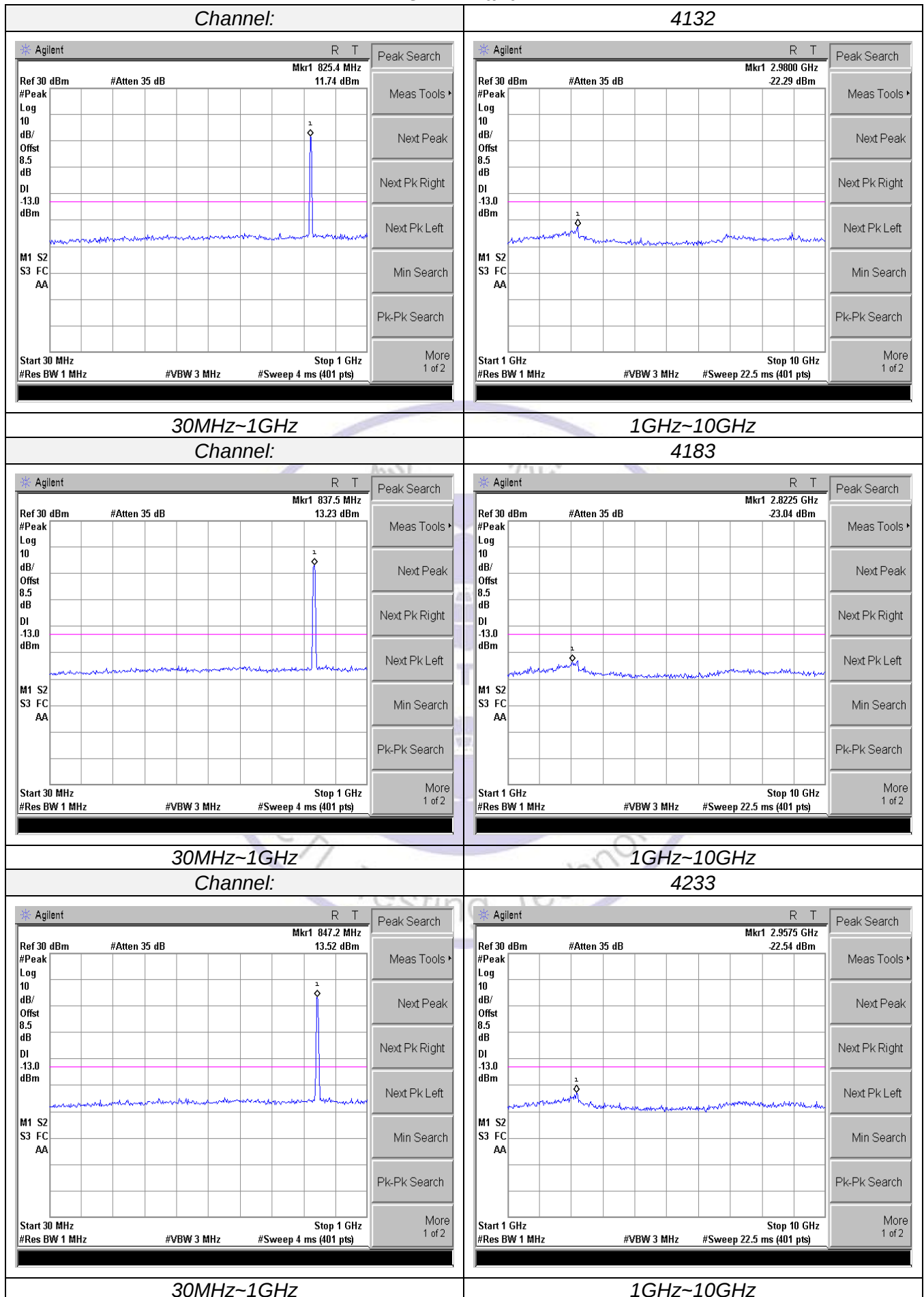


WCDMA Band II





WCDMA Band V



Radiated Measurement:**GSM850**

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	1648.40	-44.63	3.00	3.00	9.58	-29.25	-13.00	16.25	H
	2472.60	-47.39	3.47	3.00	10.72	-33.75	-13.00	20.75	H
	1648.40	-43.96	3.00	3.00	9.68	-28.36	-13.00	15.36	V
	2472.60	-46.98	3.47	3.00	10.72	-32.42	-13.00	19.42	V
190	1673.20	-35.73	3.14	3.00	9.61	-29.26	-13.00	16.26	H
	2509.80	-45.54	3.59	3.00	10.77	-38.36	-13.00	25.36	H
	1673.20	-34.95	3.14	3.00	9.61	-28.48	-13.00	15.48	V
	2509.80	-40.16	3.59	3.00	10.77	-32.98	-13.00	19.98	V
251	1697.60	-36.29	3.26	3.00	9.77	-29.78	-13.00	16.78	H
	2546.40	-40.76	3.69	3.00	10.89	-33.56	-13.00	20.56	H
	1697.60	-35.39	3.26	3.00	9.77	-28.88	-13.00	15.88	V
	2546.40	-39.94	3.69	3.00	10.89	-32.74	-13.00	19.74	V

EGPRS850

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
128	1648.40	-44.63	3.00	3.00	9.58	-32.52	-13.00	19.52	H
	2472.60	-47.39	3.47	3.00	10.72	-36.56	-13.00	23.56	H
	1648.40	-43.96	3.00	3.00	9.68	-31.71	-13.00	18.71	V
	2472.60	-46.98	3.47	3.00	10.72	-35.59	-13.00	22.59	V
190	1673.20	-39.25	3.14	3.00	9.61	-32.78	-13.00	19.78	H
	2509.80	-44.14	3.59	3.00	10.77	-36.96	-13.00	23.96	H
	1673.20	-38.34	3.14	3.00	9.61	-31.87	-13.00	18.87	V
	2509.80	-42.84	3.59	3.00	10.77	-35.66	-13.00	22.66	V
251	1697.60	-38.92	3.26	3.00	9.77	-32.41	-13.00	19.41	H
	2546.40	-43.98	3.69	3.00	10.89	-36.78	-13.00	23.78	H
	1697.60	-37.49	3.26	3.00	9.77	-30.98	-13.00	17.98	V
	2546.40	-42.66	3.69	3.00	10.89	-35.46	-13.00	22.46	V

GSM1900

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	3700.40	-44.63	4.25	3.00	12.34	-32.52	-13.00	19.52	H
	5550.60	-47.39	4.97	3.00	13.52	-36.52	-13.00	23.52	H
	3700.40	-43.96	4.25	3.00	12.34	-31.74	-13.00	18.74	V
	5550.60	-46.98	4.97	3.00	13.52	-34.69	-13.00	21.69	V
661	3760.00	-40.52	4.38	3.00	12.34	-32.56	-13.00	19.56	H
	5640.00	-45.44	5.01	3.00	13.58	-36.87	-13.00	23.87	H
	3760.00	-39.94	4.38	3.00	12.34	-31.98	-13.00	18.98	V
	5640.00	-43.22	5.01	3.00	13.58	-34.65	-13.00	21.65	V
810	3819.60	-40.70	4.49	3.00	12.45	-32.74	-13.00	19.74	H
	5729.40	-45.29	5.26	3.00	13.66	-36.89	-13.00	23.89	H
	3819.60	-38.95	4.49	3.00	12.45	-30.99	-13.00	17.99	V
	5729.40	-42.81	5.26	3.00	13.66	-34.41	-13.00	21.41	V

EGPRS1900

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
512	3700.40	-44.63	4.25	3.00	12.34	-41.56	-13.00	28.56	H
	5550.60	-47.39	4.97	3.00	13.52	-42.85	-13.00	29.85	H
	3700.40	-43.96	4.25	3.00	12.34	-39.74	-13.00	26.74	V
	5550.60	-46.98	4.97	3.00	13.52	-40.52	-13.00	27.52	V
661	3760.00	-48.62	4.38	3.00	12.34	-40.66	-13.00	27.66	H
	5640.00	-50.98	5.01	3.00	13.58	-42.41	-13.00	29.41	H
	3760.00	-47.24	4.38	3.00	12.34	-39.28	-13.00	26.28	V
	5640.00	-50.46	5.01	3.00	13.58	-41.89	-13.00	28.89	V
810	3819.60	-48.70	4.49	3.00	12.45	-40.74	-13.00	27.74	H
	5729.40	-50.65	5.26	3.00	13.66	-42.25	-13.00	29.25	H
	3819.60	-46.59	4.49	3.00	12.45	-38.63	-13.00	25.63	V
	5729.40	-48.74	5.26	3.00	13.66	-40.34	-13.00	27.34	V

WCDMA Band II

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
9262	3704.80	-44.63	4.27	3.00	12.34	-40.85	-13.00	27.85	H
	5557.20	-47.39	4.99	3.00	13.52	-41.74	-13.00	28.74	H
	3704.80	-43.96	4.27	3.00	12.34	-39.59	-13.00	26.59	V
	5557.20	-46.98	4.99	3.00	13.52	-39.45	-13.00	26.45	V
9400	3760.00	-48.55	4.38	3.00	12.34	-40.59	-13.00	27.59	H
	5640.00	-51.42	5.01	3.00	13.58	-42.85	-13.00	29.85	H
	3760.00	-47.74	4.38	3.00	12.34	-39.78	-13.00	26.78	V
	5640.00	-48.83	5.01	3.00	13.58	-40.26	-13.00	27.26	V
9538	3815.20	-48.93	4.47	3.00	12.45	-40.95	-13.00	27.95	H
	5722.80	-51.16	5.23	3.00	13.66	-42.73	-13.00	29.73	H
	3815.20	-47.23	4.47	3.00	12.45	-39.25	-13.00	26.25	V
	5722.80	-49.07	5.23	3.00	13.66	-40.64	-13.00	27.64	V

WCDMA Band V

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Diatance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
9262	1652.80	-44.63	3.02	3.00	9.58	-39.58	-13.00	26.58	H
	2479.20	-47.39	3.51	3.00	10.72	-41.74	-13.00	28.74	H
	1652.80	-43.96	3.02	3.00	9.68	-38.26	-13.00	25.26	V
	2479.20	-46.98	3.51	3.00	10.72	-40.13	-13.00	27.13	V
9400	1673.20	-47.36	3.14	3.00	9.61	-40.89	-13.00	27.89	H
	2509.80	-49.29	3.59	3.00	10.77	-42.11	-13.00	29.11	H
	1673.20	-44.59	3.14	3.00	9.61	-38.12	-13.00	25.12	V
	2509.80	-48.71	3.59	3.00	10.77	-41.53	-13.00	28.53	V
9538	1693.20	-46.40	3.24	3.00	9.77	-39.87	-13.00	26.87	H
	2539.80	-49.08	3.65	3.00	10.89	-41.84	-13.00	28.84	H
	1693.20	-43.98	3.24	3.00	9.77	-37.45	-13.00	24.45	V
	2539.80	-46.53	3.65	3.00	10.89	-39.29	-13.00	26.29	V

Remark:

1. $EIRP = P_{Mea}(dBm) - P_{cl}(dB) + G_a(dBi)$
2. We were not recorded other points as values lower than limits.
3. $Margin = Limit - EIRP$

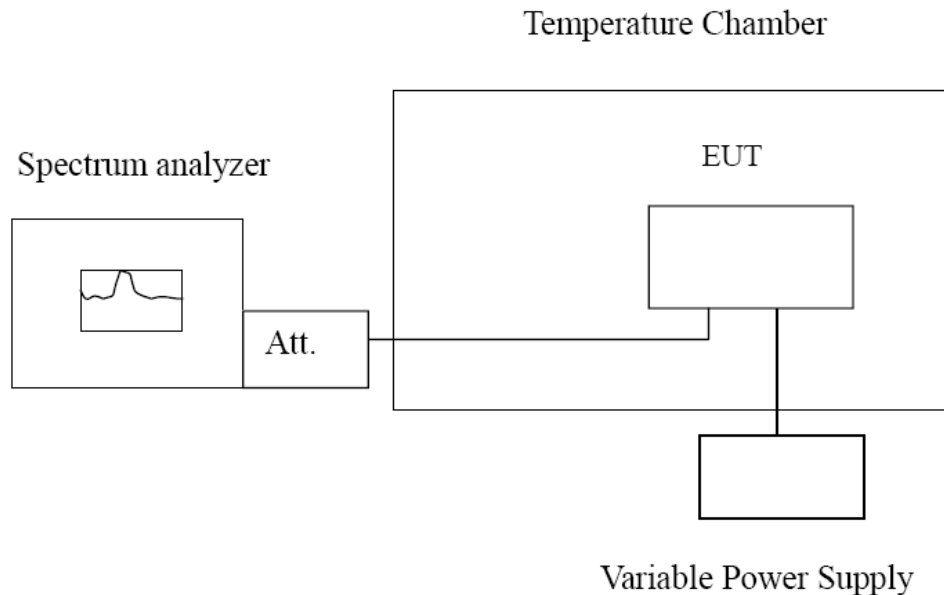
3.5 Frequency Stability under Temperature & Voltage Variations

LIMIT

FCC: Cellular Band: $\pm 2.5\text{ppm}$ PCS Band: Within the authorized frequency block

IC: $\pm 2.5\text{ppm}$

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C . After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of $+50^{\circ}\text{C}$ reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C . Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

TEST RESULTS

Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.00	-30	39.42	0.047	±2.5	Pass
	-20	45.41	0.054		
	-10	41.24	0.049		
	0	39.04	0.047		
	10	58.66	0.070		
	20	79.27	0.095		
	30	69.29	0.083		
	40	58.12	0.069		
	50	96.27	0.115		
13. 80	25	75.54	0.090	±2.5	Pass
End point 10.20	25	38.25	0.046		

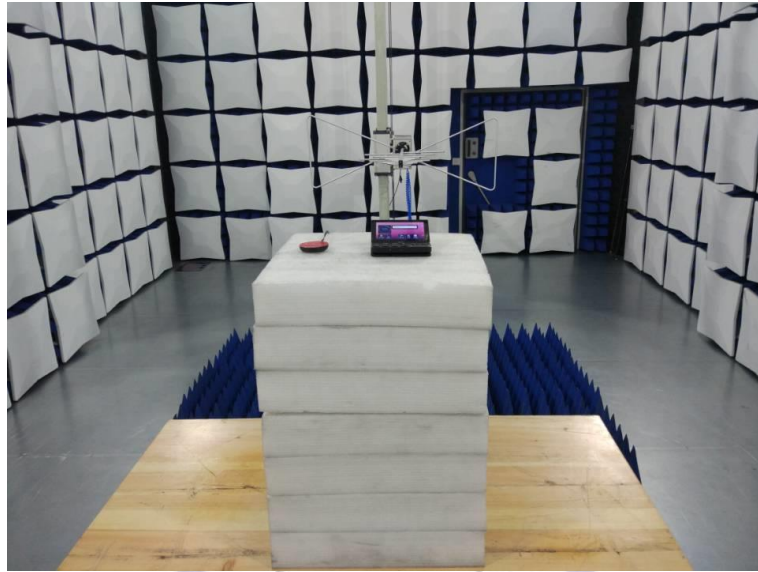
Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.00	-30	87.74	0.047	FCC: Within the authorized frequency block IC±2.5	Pass
	-20	33.68	0.018		
	-10	46.29	0.025		
	0	33.87	0.018		
	10	80.87	0.043		
	20	46.95	0.025		
	30	51.14	0.027		
	40	65.13	0.035		
	50	96.34	0.051		
13. 80	25	92.22	0.049	FCC: Within the authorized frequency block IC±2.5	Pass
End point 10.20	25	51.00	0.027		

Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.00	-30	89.13	0.047	FCC: Within the authorized frequency block IC±2.5	Pass
	-20	39.36	0.021		
	-10	65.48	0.035		
	0	66.86	0.036		
	10	57.73	0.031		
	20	50.29	0.027		
	30	51.06	0.027		
	40	72.87	0.039		
	50	53.62	0.029		
13. 80	25	77.11	0.041	FCC: Within the authorized frequency block IC±2.5	Pass
End point 10.20	25	78.51	0.042		

Reference Frequency: WCDMA Band V Middle channel=4182 channel=836.6MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.00	-30	39.26	0.047	±2.5	Pass
	-20	65.27	0.078		
	-10	56.24	0.067		
	0	53.00	0.063		
	10	37.26	0.045		
	20	66.45	0.079		
	30	93.94	0.112		
	40	82.72	0.099		
	50	84.05	0.100		
13. 80	25	30.53	0.036	±2.5	Pass
End point 10.20	25	40.37	0.048		



4 Test Setup Photos of the EUT



5 External and Internal Photos of the EUT

Please refer to photo documents

***** End of Report *****

