

FCC Radio Test Report

FCC ID: QIPBGS12

This report concerns: Original Grant

Project No. : 1902H007
Equipment : GSM/GPRS Wireless Module
Test Model : BGS12
Series Model : N/A
Applicant : Gemalto M2M GmbH
Address : Gemalto M2M GmbH , Siemensdamm 50 Berlin
Germany

Date of Receipt : Feb. 28, 2019
Date of Test : Mar. 01, 2019 ~ Mar. 12, 2019
Issued Date : Mar. 22, 2019
Tested by : BTL Inc.

Technical Manager

: 
(David Mao)

Authorized Signatory

: 
(James Chiu)

B T L I N C .

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Certificate # 5123. 03

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Mar. 22, 2019

1. GENERAL SUMMARY

Equipment : GSM/GPRS Wireless Module
Brand Name : CINTERION
Test Model : BGS12
Series Model : N/A
Applicant : Gemalto M2M GmbH
Manufacturer : Gemalto M2M GmbH
Address : Gemalto M2M GmbH , Siemensdamm 50 Berlin Germany
Date of Test : Mar. 01, 2019 ~ Mar. 12, 2019
Test Sample : Engineering Sample No.: B190300056
Standard(s) : 47 CFR FCC Part 24 Subpart E
47 CFR FCC Part 2
ANSI/TIA/EIA-603-E-2016
KDB 971168 D01 Power Meas License Digital Systems v03r01

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1902H007) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

Test results included in this report are only for the PCS1900.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 24 Subpart E& Part 2			
Standard(s) Section	Test Item	Judgment	Tested By
2.1046 & 24.232(c)	Radiated power	PASS	Krain Wu
2.1046 & 24.232(c)	Maximum Output Power	PASS	Krain Wu
2.1049 & 24.238(a)	Occupied Bandwidth	PASS	Krain Wu
2.1051 & 24.238(a)	Conducted Spurious Emissions	PASS	Krain Wu
2.1053 & 24.238(a)	Radiated Spurious Emissions	PASS	Krain Wu
24.238(a)	Band Edge Measurements	PASS	Krain Wu
24.232(d)	Peak To Average Ratio	PASS	Krain Wu
2.1055 & 24.235	Frequency Stability	PASS	Krain Wu

NOTE:

(1) "N/A" denotes test is not applicable to this device.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China

BTL's test firm number for FCC: 476765

BTL's designation number for FCC: CN1241

2.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

A. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
SH-CB01	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.12
		30MHz ~ 200MHz	H	3.20
		200MHz ~ 1,000MHz	V	3.12
		200MHz ~ 1,000MHz	H	3.18

Test Site	Method	Measurement Frequency Range	U,(dB)
SH-CB01	CISPR	1GHz ~ 6GHz	4.40
		6GHz ~ 18GHz	4.86
		18GHz ~ 26.5GHz	3.64
		26.5GHz ~ 40GHz	3.78

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	GSM/GPRS Wireless Module			
Brand Name	CINTERION			
Test Model	BGS12			
Series Model	N/A			
Model Difference(s)	N/A			
Hardware Version	B2			
Software Version	00.915			
Antenna Type	Internal Antenna			
Antenna Gain	PCS1900/GPRS1900	2.7dBi		
IMEI No.	353514100000325			
Modulation Type	GSM/GPRS		GMSK	
Operation Frequency	GSM/GPRS		1850.2MHz ~ 1909.8MHz	
Max. EIRP Power	GSM	GMSK	29.73	dBm
	GPRS	GMSK	29.76	dBm
Power Source	DC power supply.			
Power Rating	DC 3.8V			

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. EUT operation frequency: 824.2MHz ~ 848.8MHz; 1850.2MHz ~ 1909.8MHz. Only 1850.2MHz ~ 1909.8MHz test data record in this report.

3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

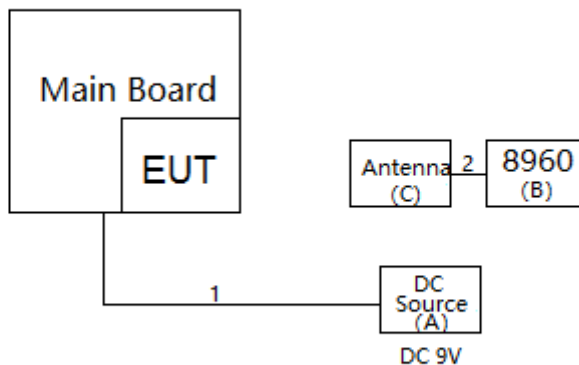
Following channel(s) was (were) selected for the final test as listed below:

GSM MODE			
Test Item	Available Channel	Tested Channel	Mode
EIRP	512 to 810	512, 661, 810	GSM, GPRS
Maximum Output Power	512 to 810	512, 661, 810	GSM, GPRS
Occupied Bandwidth	512 to 810	512, 661, 810	GSM, GPRS
Conducuted Emission	512 to 810	661	GSM, GPRS
Radiated Emission	512 to 810	661	GSM, GPRS
Band Edge	512 to 810	512, 810	GSM, GPRS
Peak to Average Ratio	512 to 810	512, 661, 810	GSM, GPRS
Frequency Stability	512 to 810	661	GSM

EUT TEST CONDITIONS:

Test Item	Environmental Conditions	Test Voltage
EIRP	21°C, 54%RH	DC 3.8V
Maximum Output Power	21°C, 54%RH	DC 3.8V
Occupied Bandwidth	21°C, 54%RH	DC 3.8V
Conducted Emission	21°C, 54%RH	DC 3.8V
Radiated Emission	21°C, 54%RH	DC 3.8V
Band Edge	21°C, 54%RH	DC 3.8V
Peak to Average Ratio	21°C, 54%RH	DC 3.8V
Frequency Stability	Normal and Extreme	Normal and Extreme

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED FOR RADIATED



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
A	DC Power Supply	GW	GPC3030ND	N/A
B	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942
C	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	00206960

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.2M	DC Cable
2	NO	NO	1M	Cable

4. TEST RESULT

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMIT

Mobile / Portable station are limited to 2 watts e.i.r.p.

4.1.2 TEST PROCEDURE

EIRP:

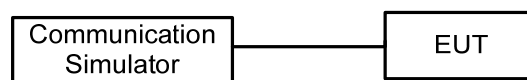
$EIRP = \text{Output Power} + \text{Antenan gain}$

Maximum Output Power:

The EUT was set up for the maximum power with GSM and GPRS link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 TESTSETUP LAYOUT

Output Power Measurement



4.1.4 TEST DEVIATION

No deviation

4.1.5 TEST RESULTS

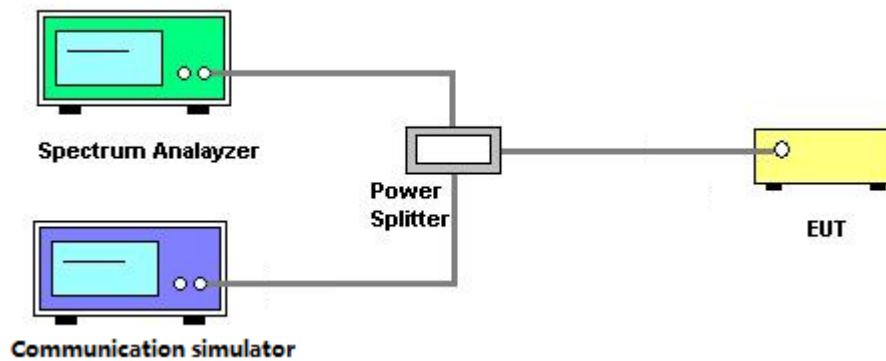
Please refer to the Appendix A.

4.2 OCCUPIED BANDWIDTH MEASUREMENT

4.2.1 TEST PROCEDURE

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.

4.2.2 TEST SETUP LAYOUT



4.2.3 TEST DEVIATION

No deviation

4.2.4 TEST RESULTS

Please refer to the Appendix B.

4.3 CONDUCTED EMISSIONS MEASUREMENT

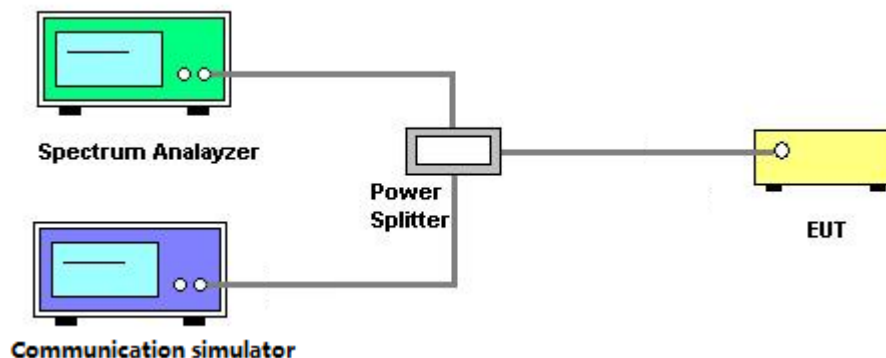
4.3.1 LIMIT

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. The emission limit equal to -13dBm.

4.3.2 TEST PROCEDURES

1. The testing follows FCC KDB 971168 v03r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set $RBW \geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from $43 + 10 \log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10 \log(P)](dB)$
 $= [30 + 10 \log(P)](dBm) - [43 + 10 \log(P)](dB)$
 $= -13dBm$

4.3.3 TESTSETUP LAYOUT



4.3.4 TESTDEVIATION

No deviation

4.3.5 TEST RESULTS

Please refer to the Appendix C.

4.4 RADIATED EMISSIONS MEASUREMENT

4.4.1 LIMIT

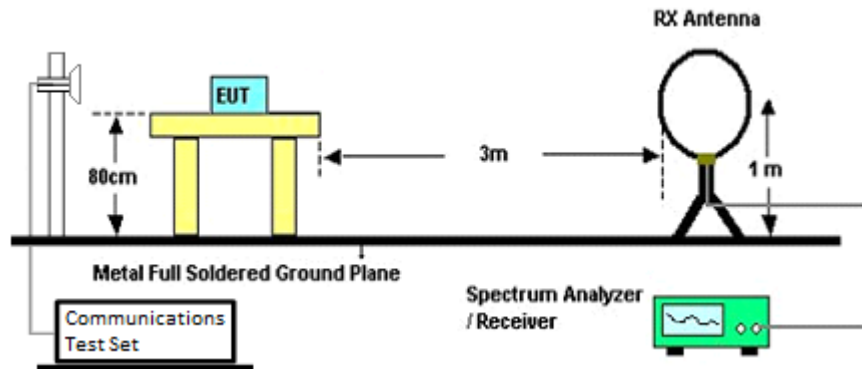
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

4.4.2 TEST PROCEDURES

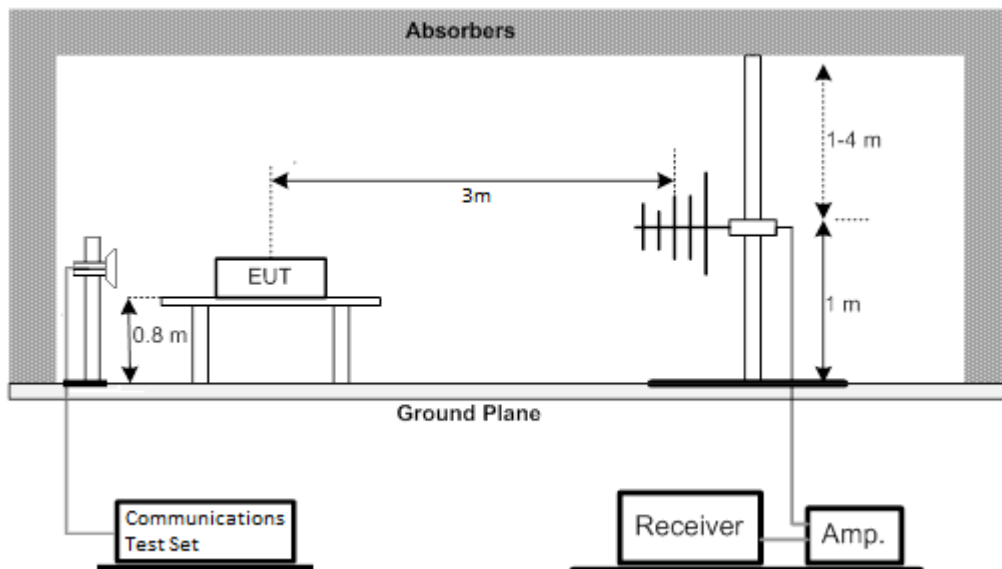
1. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
3. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
4. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15\text{dBi}.$
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.4.3 TESTSETUP LAYOUT

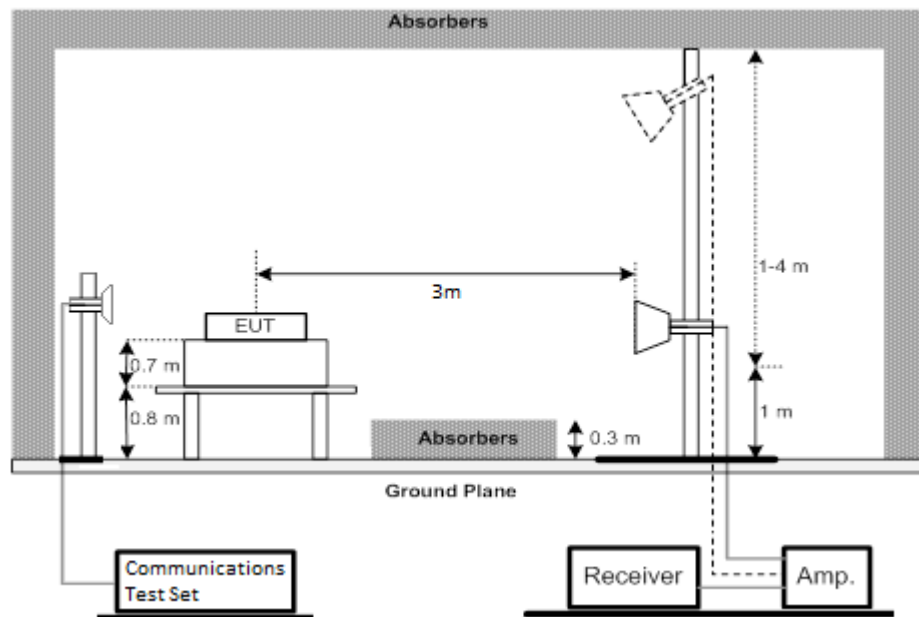
Below 30MHz



30MHz to 1GHz



Above 1GHz



4.4.4 TEST DEVIATION

No deviation

4.4.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Appendix D.

4.4.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the Appendix E.

4.4.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the Appendix F.

4.5 BAND EDGE MEASUREMENT

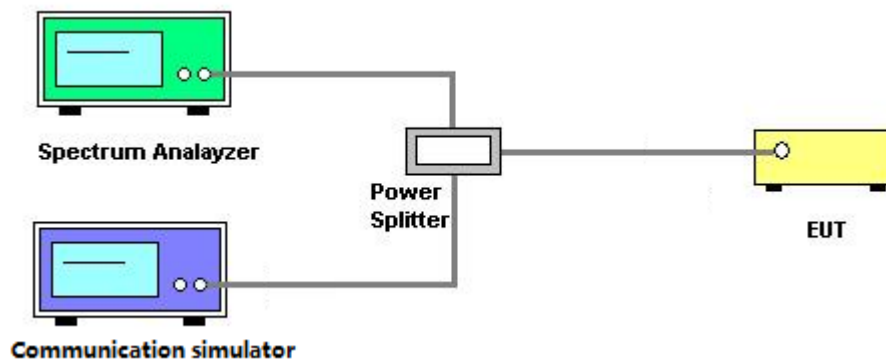
4.5.1 LIMIT

A 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. In the 1 MHz 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.

4.5.2 TEST PROCEDURES

1. All measurements were done at low and high operational frequency range.
2. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS).
3. Record the max trace plot into the test report.

4.5.3 TESTSETUP LAYOUT



4.5.4 TESTDEVIATION

No deviation

4.5.5 TEST RESULTS

Please refer to the Appendix G.

4.6 PEAK TO AVERAGE RATIO MEASUREMENT

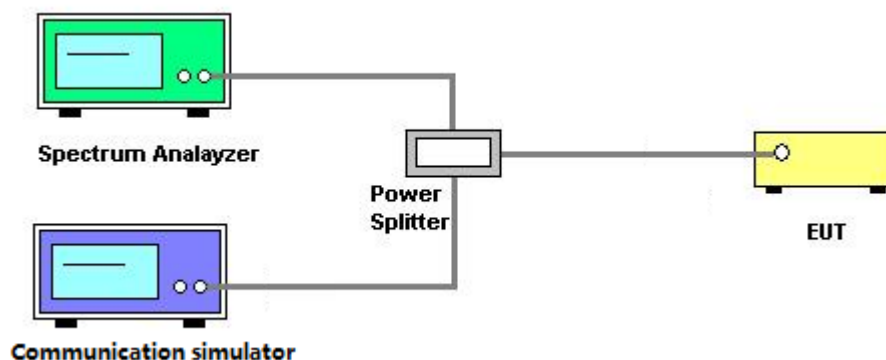
4.6.1 LIMIT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

4.6.2 TEST PROCEDURES

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.6.3 TESTSETUP LAYOUT



4.6.4 TESTDEVIATION

No deviation

4.6.5 TEST RESULTS

Please refer to the Appendix H.

4.7 FREQUENCY STABILITY MEASUREMENT

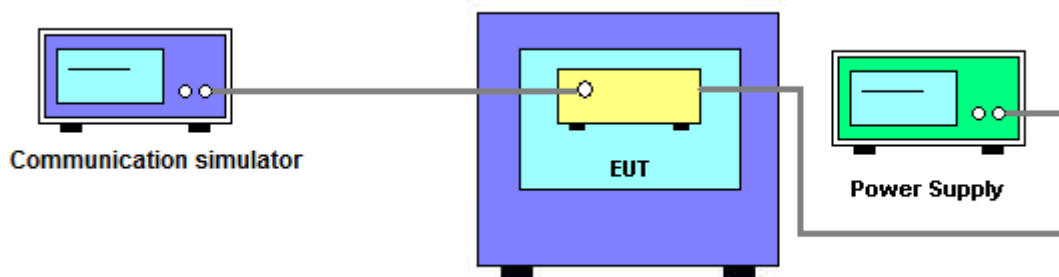
4.7.1 LIMIT

1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.7.2 TEST PROCEDURES

1. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
2. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. The frequency error was recorded frequency error from the communication simulator.

4.7.3 TESTSETUP LAYOUT



4.7.4 TESTDEVIATION

No deviation

4.7.5 TEST RESULTS

Please refer to the Appendix I.

5. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Pre-Amplifier	emci	EMC184045SE	980409	Mar. 31, 2019
2	Pre-Amplifier	emci	EMC012645SE	980421	Mar. 31, 2019
3	Pre-Amplifier	emci	EMC9135	980400	Mar. 31, 2019
4	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1787	Mar. 31, 2019
5	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3116C	00203919	Mar. 31, 2019
6	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	719	Mar. 31, 2019
7	Cable	N/A	EMC102-SM-SM-6000	170336	Jun. 10, 2019
8	Cable	N/A	EMC102-KM-KM-2500	170627	Jun. 10, 2019
9	Cable	N/A	EMC104-SM-NM-3500	170621	Jun. 10, 2019
10	Cable	N/A	EMC104-SM-SM-1000	170331	Jun. 10, 2019
11	Cable	N/A	EMC104-SM-SM-7000	170330	Jun. 10, 2019
12	Notch Filter	Woken	WFIL-N699-721F-03	WRS45WC2B2	Jul. 17, 2019
13	Notch Filter	Woken	WFIL-N1710-1755F-01	WR455FWC2B6	Jul. 17, 2019
14	Notch Filter	Woken	WFIL-N1850-1910F-01	WRS45WC2B4	Jul. 17, 2019
15	Notch Filter	Woken	WFIL-N824-849F-01	WRS45WC2B6	Jul. 17, 2019
16	MXE EMI Receiver	Keysight	N9038A	MY57150106	Mar. 31, 2019
17	EXA Spectrum Analyzer	Keysight	N9010A	MY56480545	Mar. 31, 2019
18	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942	Nov. 11, 2019
19	Controller	MF	MF-7802BS	N/A	N/A
20	Controller	innco systems GmbH	CO3000-1D	976	N/A
21	EMI Test Receiver	R&S	ESCI	100082	Mar. 31, 2019
22	Loop Antenna	emci	EMCI LPA600	275	Mar. 31, 2019

Conducted Emission & Band Edge & Occupied Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942	Nov. 20, 2019
2	Spectrum Analyzer	R&S	FSP40	100626	Mar. 31, 2019
3	EXA Spectrum Analyzer	Keysight	N9010A	MY56480579	Mar. 31, 2019
4	Power Divider	JUK	PD-2SF-2060	N/A	N/A

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	8960 SERIES 10 WIRELESS COMMUNICATIONS TEST SET	Agilent	E5515C	GB45070942	Nov. 20, 2019
2*	Spectrum Analyzer	R&S	FSP40	100626	Mar. 31, 2019
3	EXA Spectrum Analyzer	Keysight	N9010A	MY56480579	Mar. 31, 2019
4	Power Divider	JUK	PD-2SF-2060	N/A	N/A

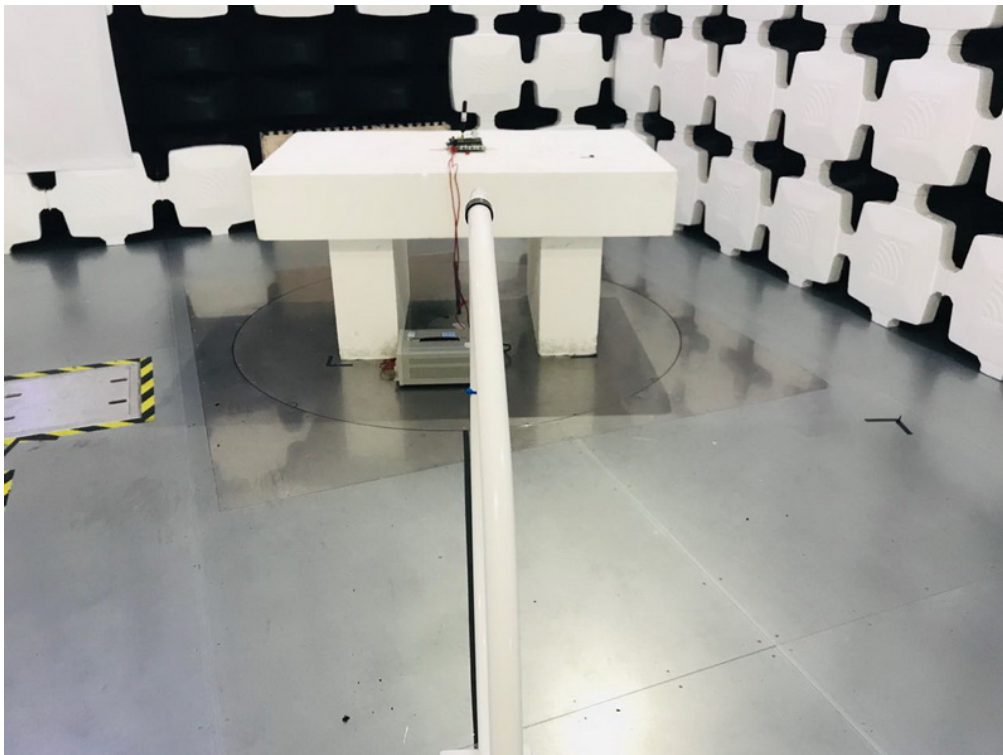
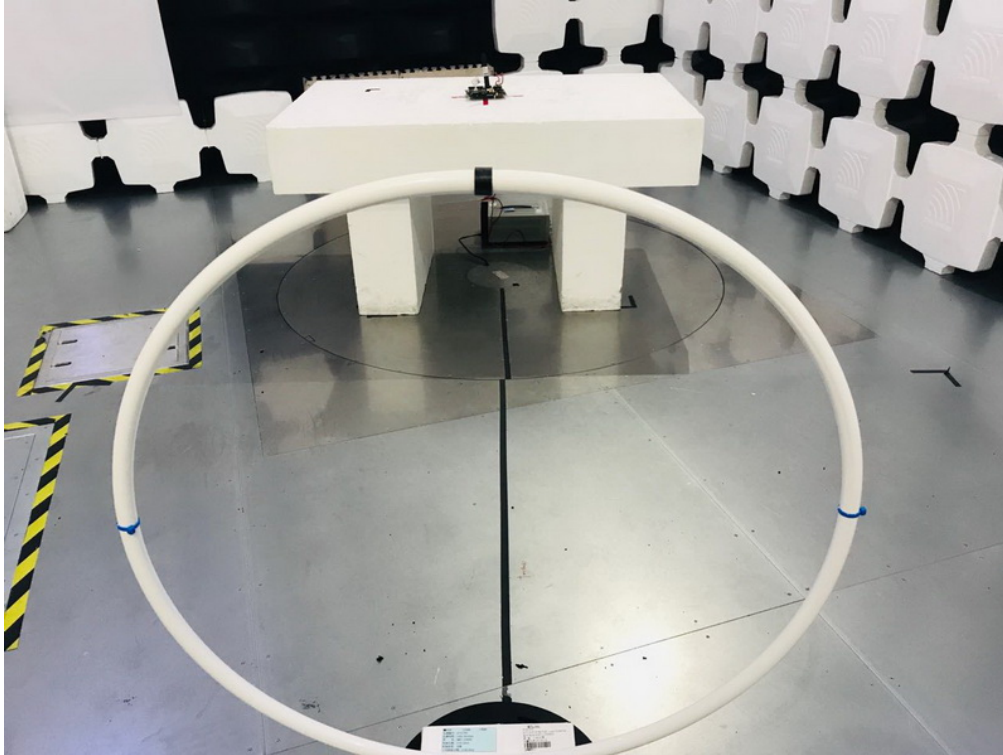
Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

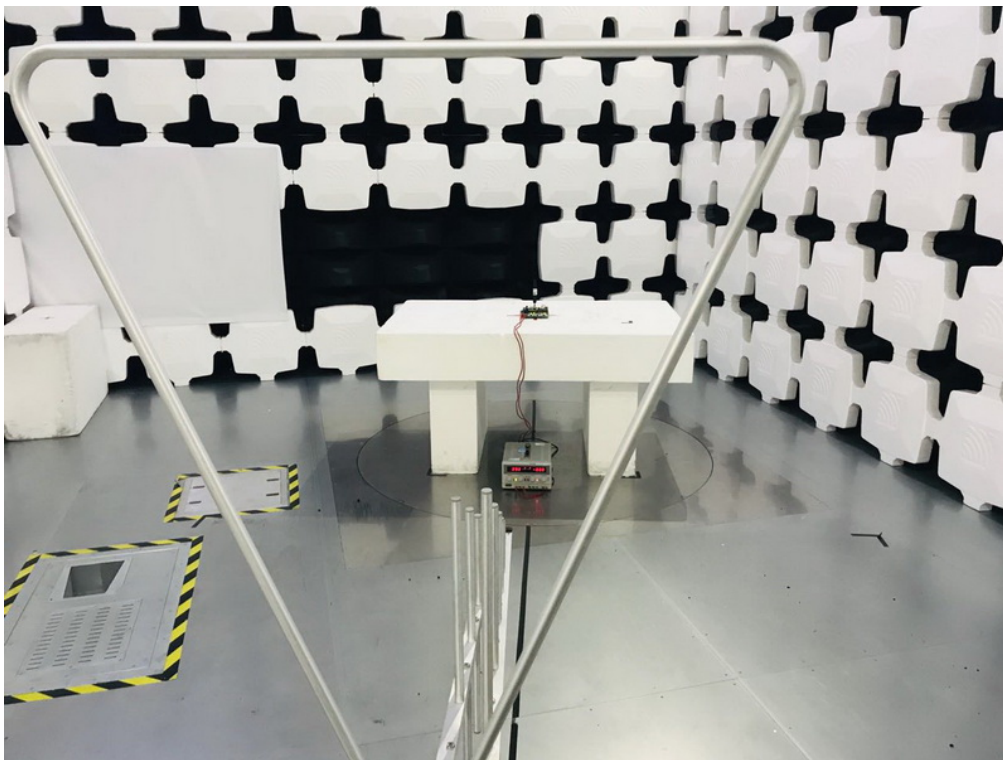
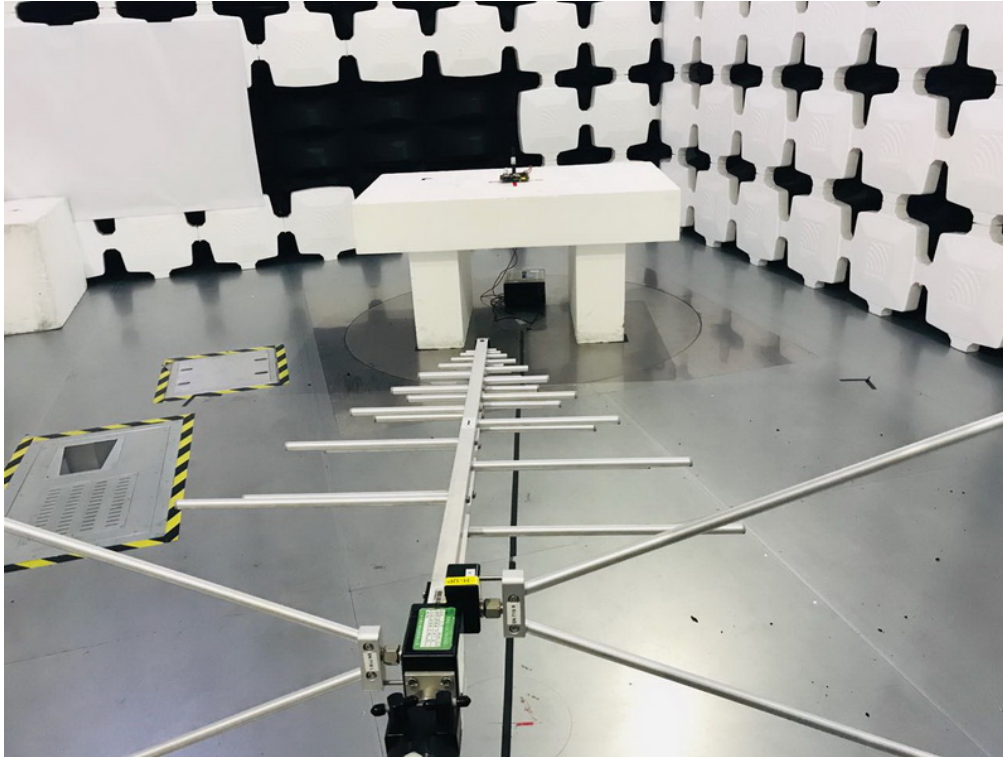
*All calibration period of equipment list is three year

6. EUT TEST PHOTO

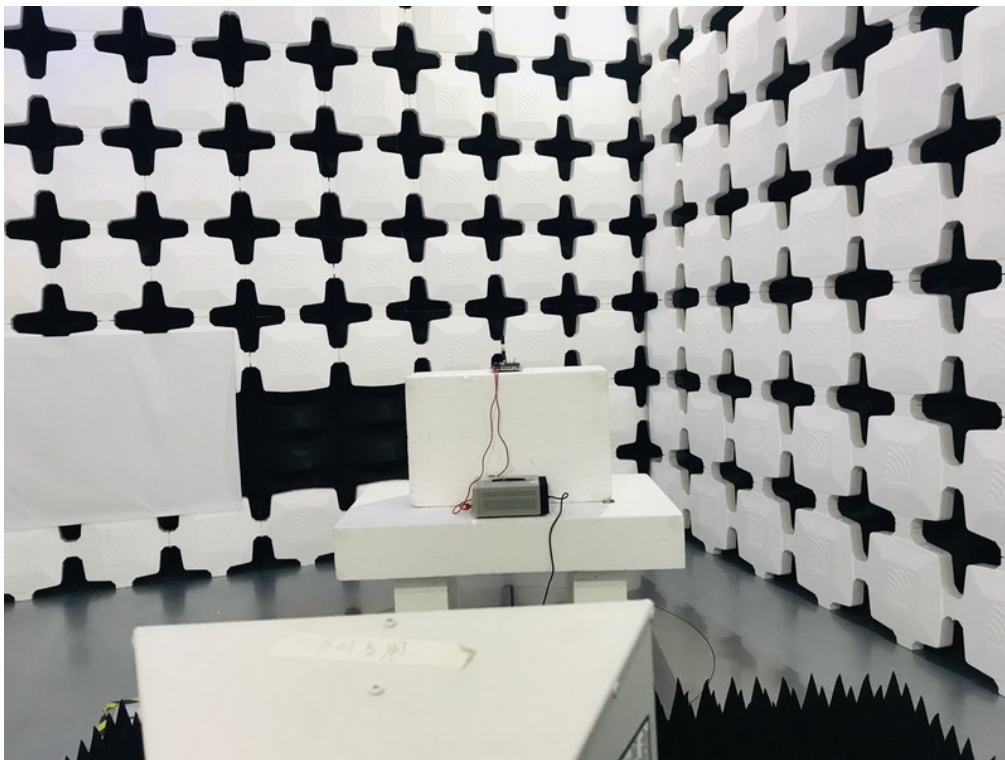
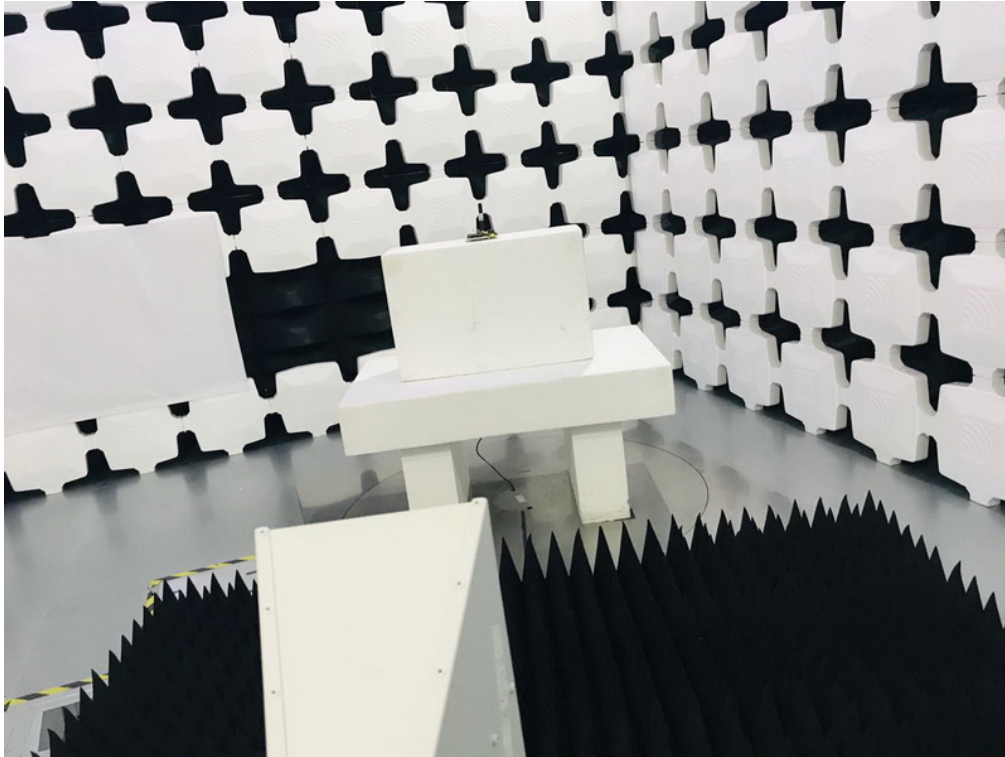
9 kHz to 30 MHz



30 MHz to 1 GHz



Above 1 GHz



APPENDIX A - MAXIMUM OUTPUT POWER

Maximum Output Power (dBm):

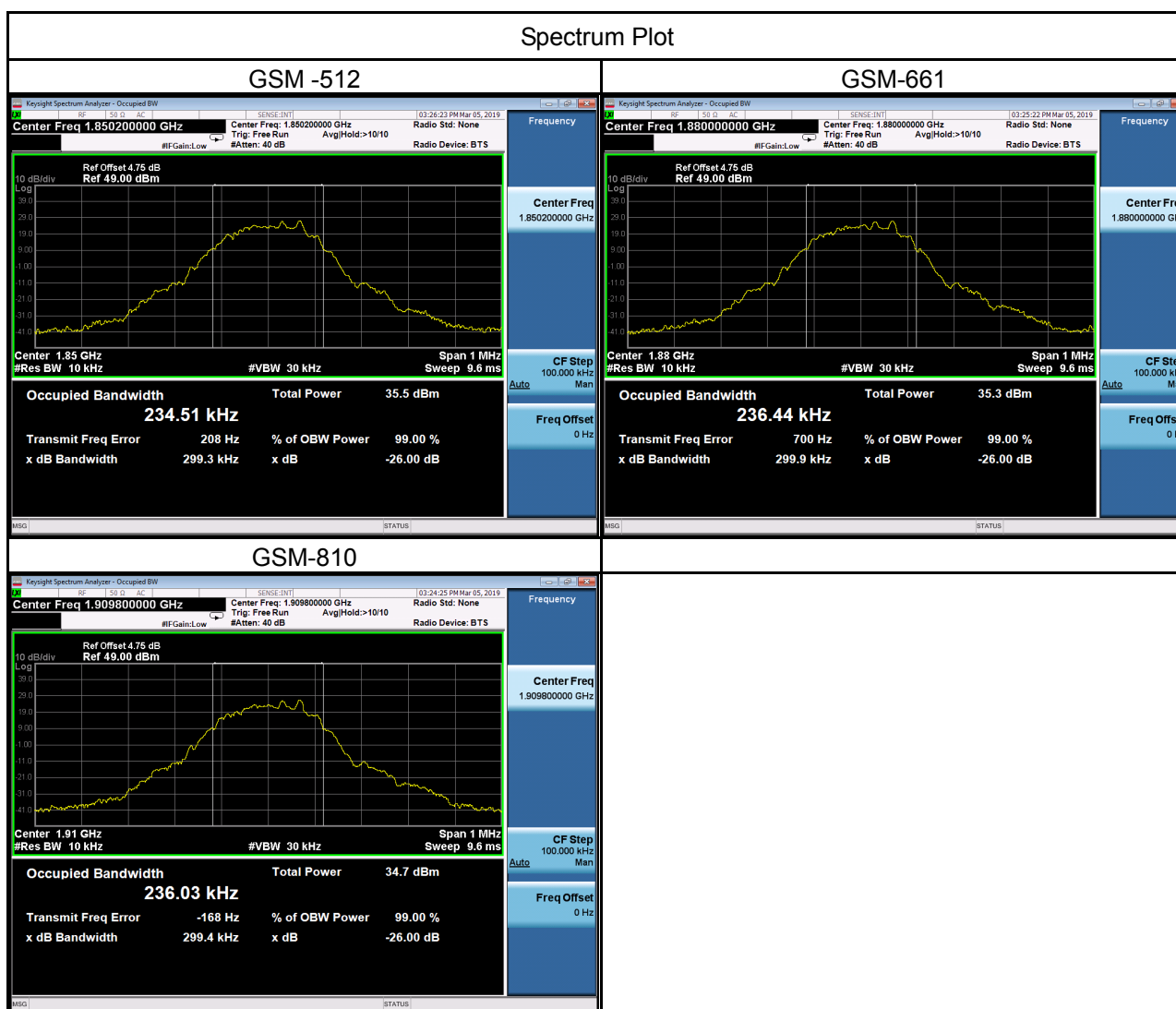
GSM/GPRS		Burst Output Power		
		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
PCS1900		26.93	27.03	26.89
GPRS1900 (GMSK)	1 Tx Slot	27.03	27.06	26.96

EIRP Power (dBm):

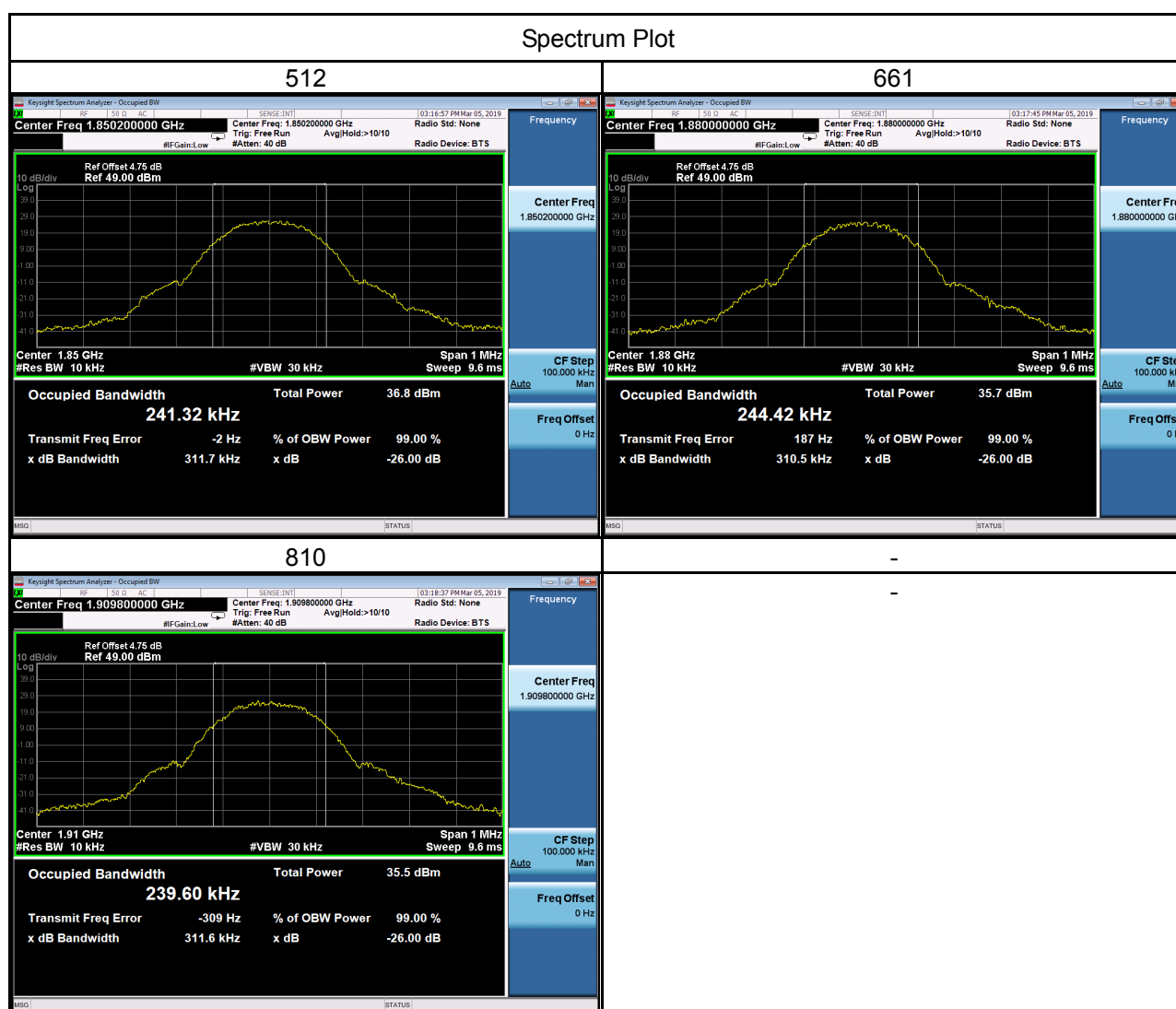
GSM/GPRS		EIRP Power		
		512CH	661CH	810CH
		1850.2MHz	1880MHz	1909.8MHz
PCS1900		29.63	29.73	29.59
GPRS1900 (GMSK)	1 Tx Slot	29.73	29.76	29.66

APPENDIX B - OCCUPIED BANDWIDTH

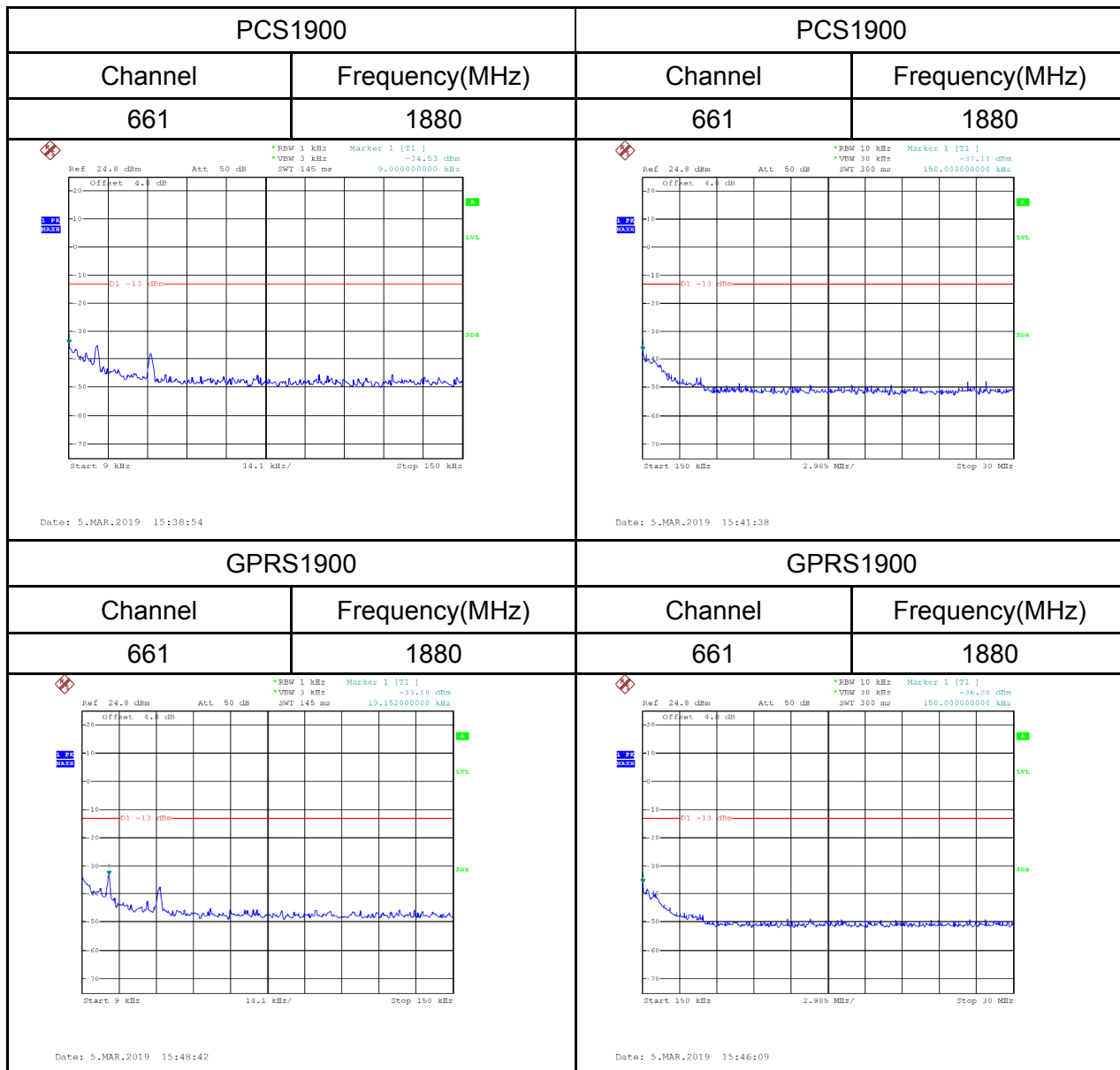
PCS1900					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
512	1850.2	0.235	512	1850.2	0.299
661	1880	0.236	661	1880	0.300
810	1909.8	0.236	810	1909.8	0.299



GPRS1900					
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
512	1850.2	0.241	512	1850.2	0.312
661	1880	0.244	661	1880	0.311
810	1909.8	0.240	810	1909.8	0.312



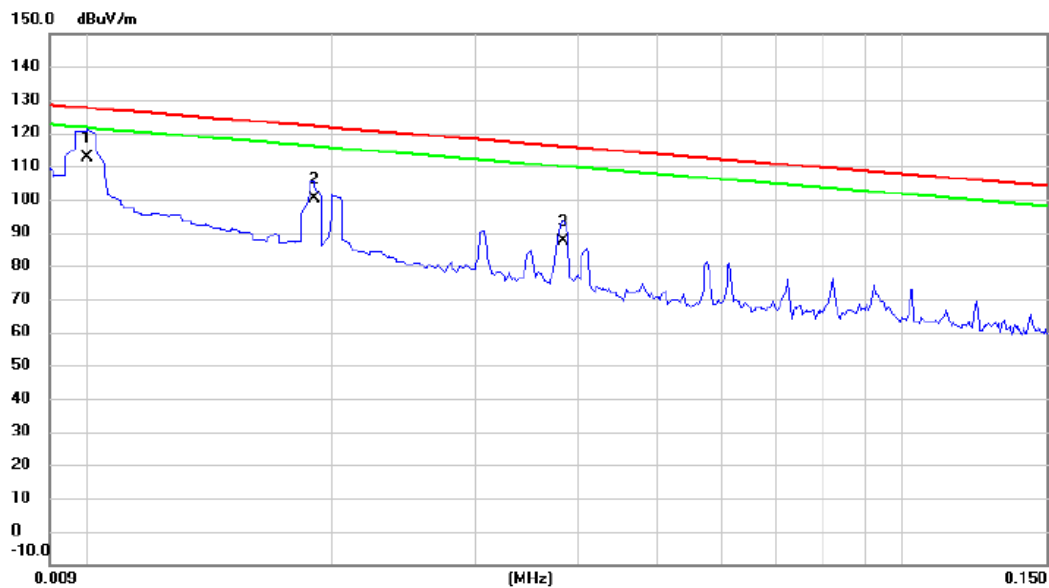
APPENDIX C - CONDUCTED EMISSIONS



APPENDIX D - RADIATED EMISSION (9KHZ TO 30MHZ)

Test Mode: TX Mode

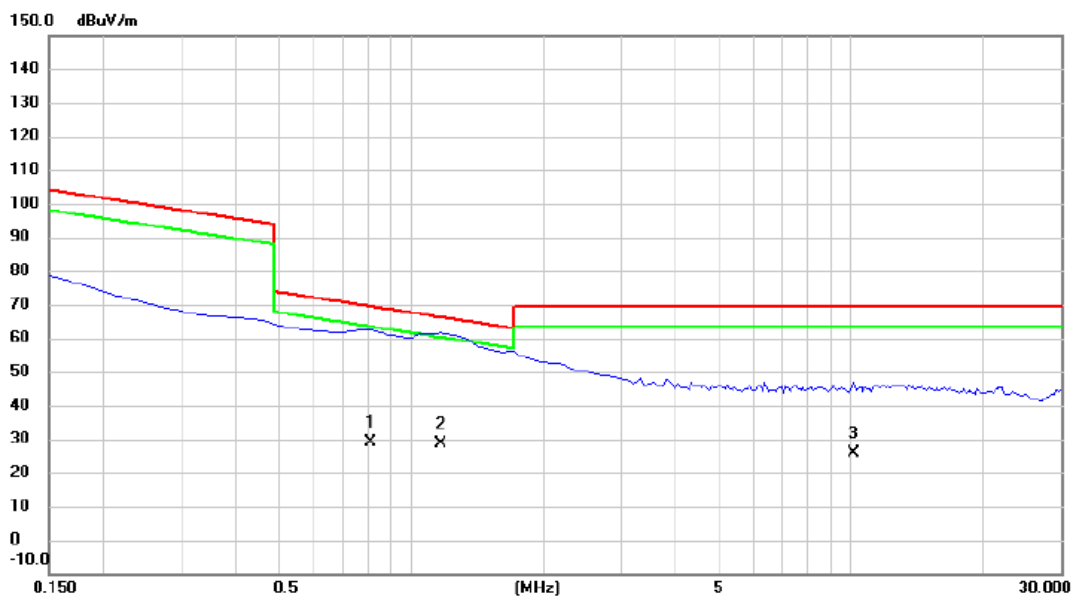
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0100	34.11	78.40	112.51	127.60	-15.09	AVG	
2		0.0190	27.24	72.91	100.15	122.03	-21.88	AVG	
3		0.0383	20.17	67.21	87.38	115.94	-28.56	AVG	

Test Mode: TX Mode

Ant 0°

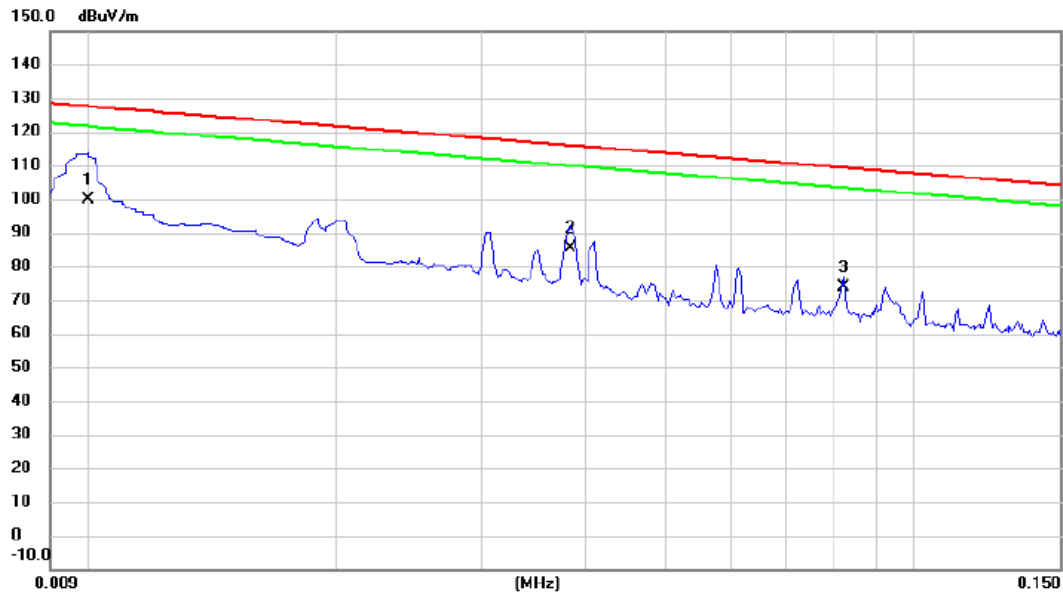


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.8080	-12.86	42.05	29.19	69.46	-40.27	QP	
2	*	1.1670	-12.35	40.80	28.45	66.26	-37.81	QP	
3		10.1393	-12.01	37.97	25.96	69.54	-43.58	QP	

Test Mode:

TX Mode

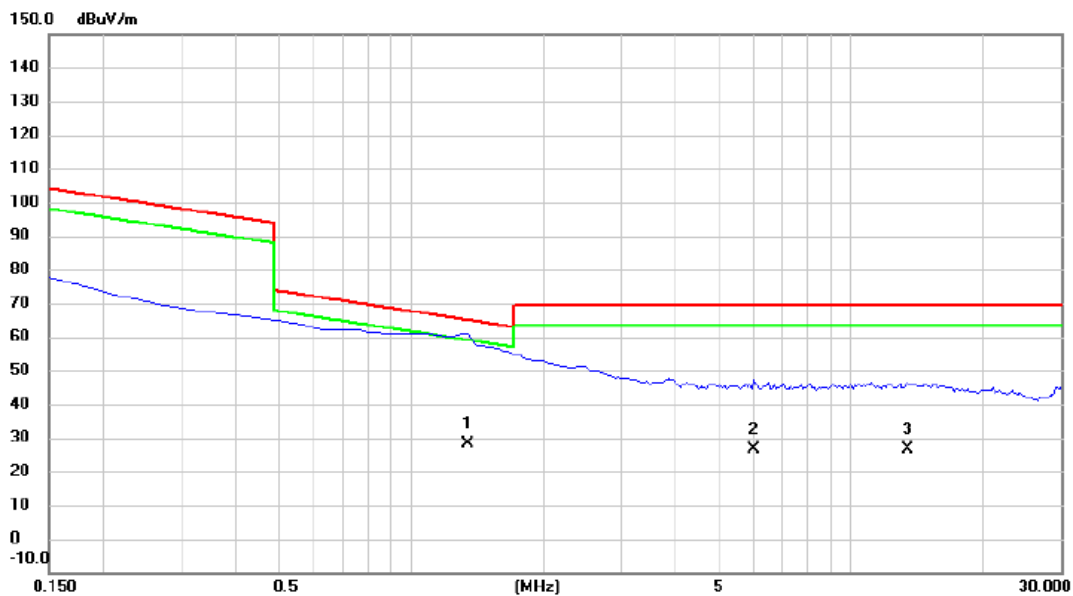
Ant 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	0.0100	21.24	78.40	99.64	127.60	-27.96	AVG	
2		0.0383	18.15	67.21	85.36	115.94	-30.58	AVG	
3		0.0821	13.71	59.91	73.62	109.32	-35.70	AVG	

Test Mode: TX Mode

Ant 90°

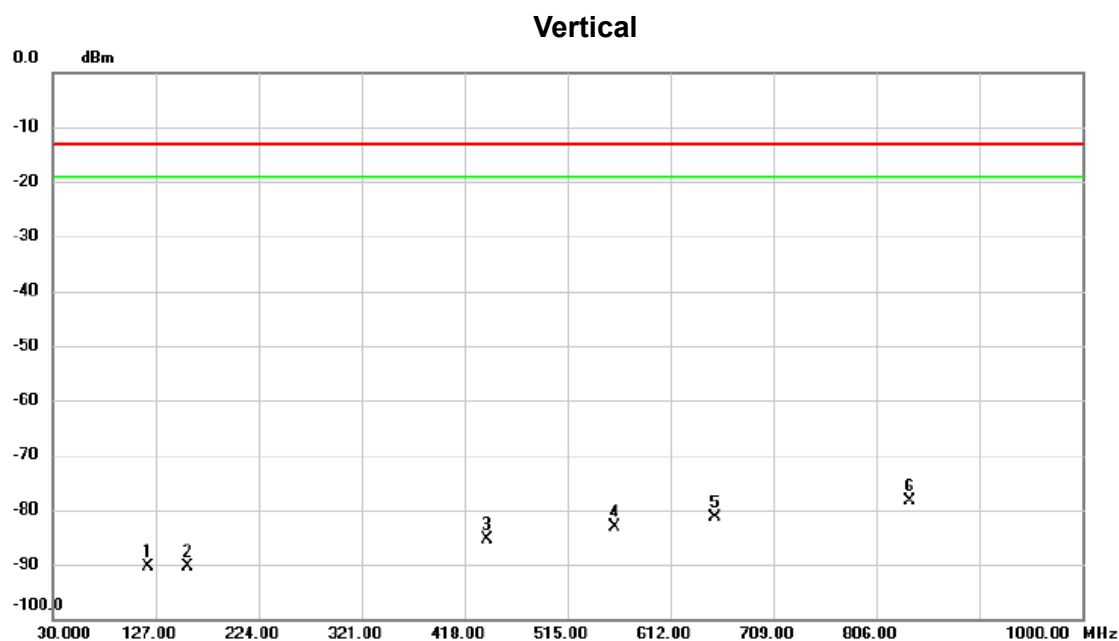


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	1.3463	-12.33	40.37	28.04	65.02	-36.98	QP	
2		6.0121	-11.21	37.80	26.59	69.54	-42.95	QP	
3		13.4894	-11.47	37.97	26.50	69.54	-43.04	QP	

APPENDIX E - RADIATED EMISSION (30MHZ TO 1GHZ)

Test Mode:

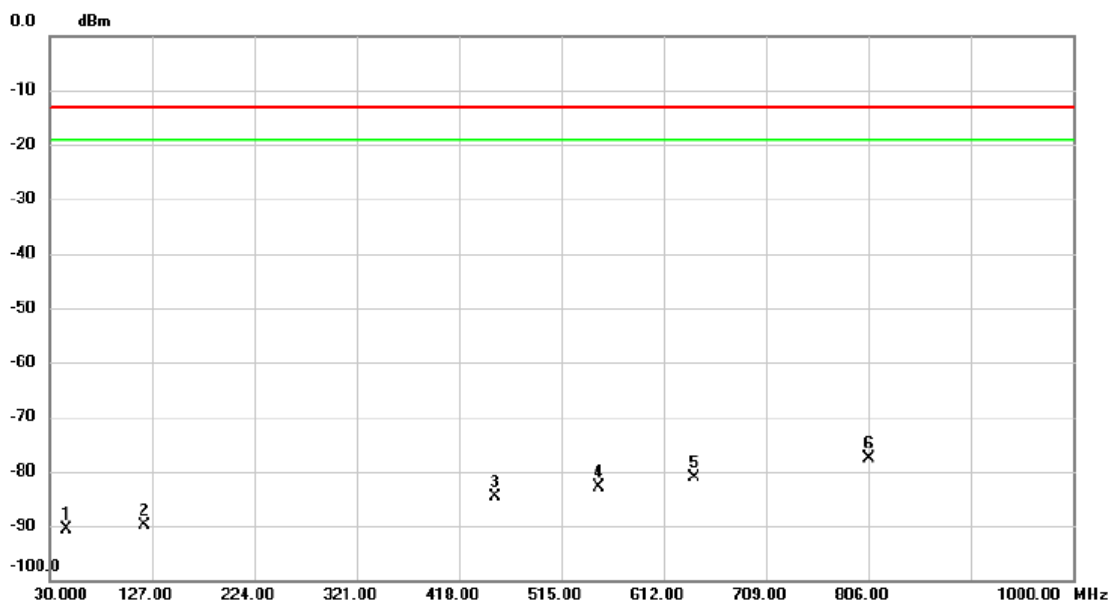
PCS1900_TX CH661



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		119.2400	-71.31	-19.11	-90.42	-13.00	-77.42	peak	
2		157.5550	-74.06	-16.38	-90.44	-13.00	-77.44	peak	
3		439.3400	-73.82	-11.51	-85.33	-13.00	-72.33	peak	
4		559.6200	-73.85	-9.36	-83.21	-13.00	-70.21	peak	
5		653.7100	-73.66	-7.65	-81.31	-13.00	-68.31	peak	
6	*	838.0100	-72.64	-5.80	-78.44	-13.00	-65.44	peak	

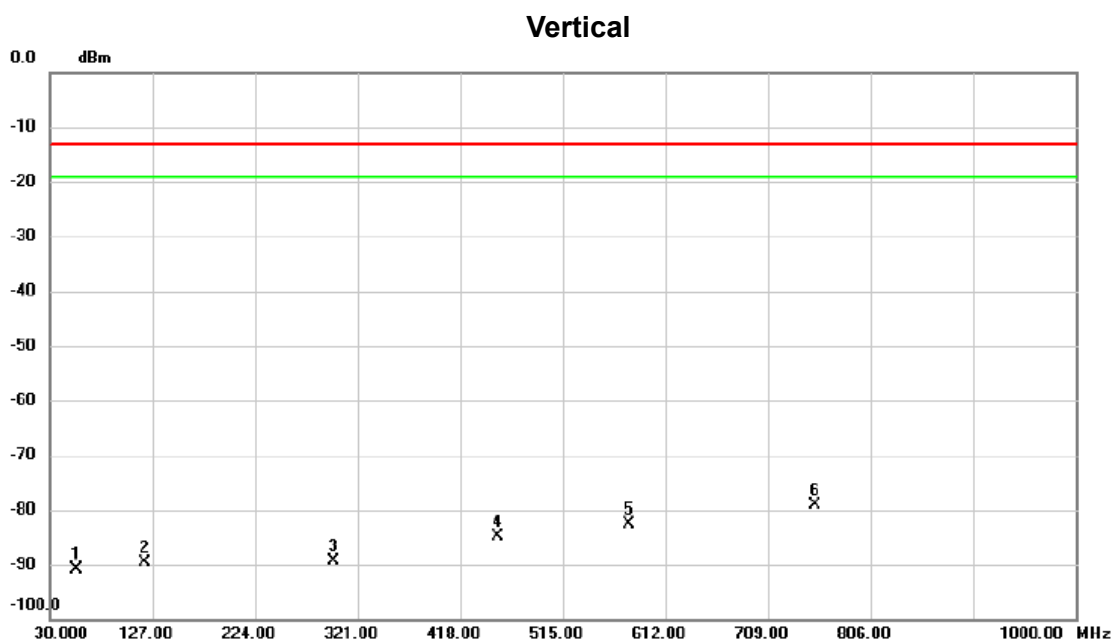
Test Mode: PCS1900_TX CH661

Horizontal



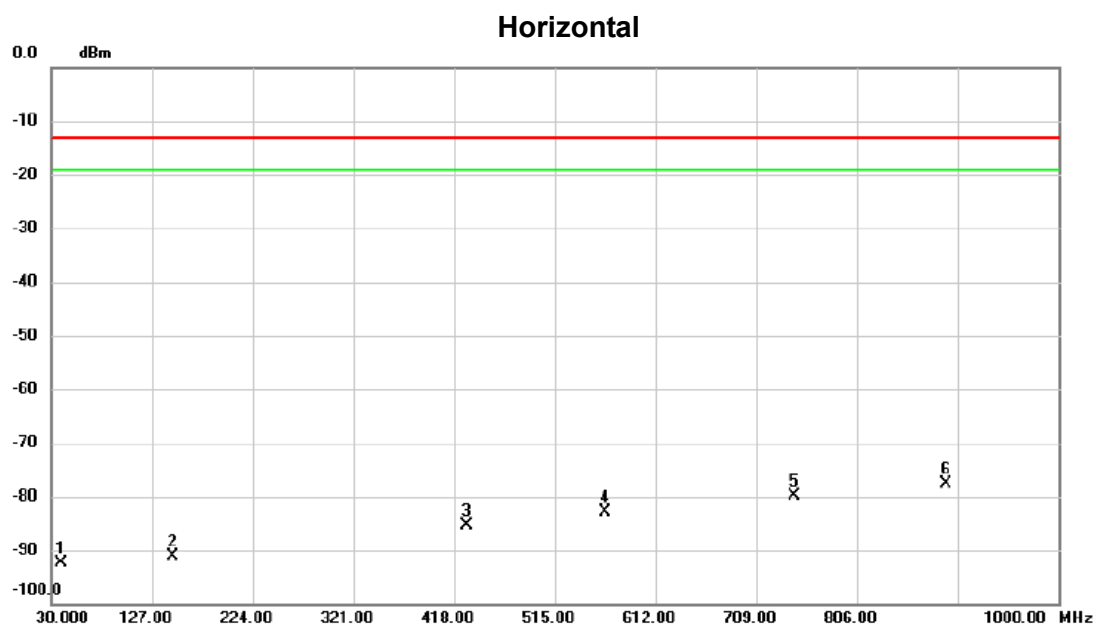
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		46.0050	-72.85	-17.78	-90.63	-13.00	-77.63	peak	
2		119.7250	-70.70	-19.08	-89.78	-13.00	-76.78	peak	
3		451.9500	-73.48	-11.16	-84.64	-13.00	-71.64	peak	
4		550.8900	-73.55	-9.35	-82.90	-13.00	-69.90	peak	
5		640.6150	-73.28	-7.91	-81.19	-13.00	-68.19	peak	
6	*	806.9700	-71.07	-6.61	-77.68	-13.00	-64.68	peak	

Test Mode: GPRS1900_TX CH661



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		55.2200	-72.43	-18.42	-90.85	-13.00	-77.85	peak	
2		119.7250	-70.48	-19.08	-89.56	-13.00	-76.56	peak	
3		298.6900	-73.96	-15.48	-89.44	-13.00	-76.44	peak	
4		452.9200	-73.69	-11.19	-84.88	-13.00	-71.88	peak	
5		577.0800	-73.26	-9.37	-82.63	-13.00	-69.63	peak	
6	*	753.1350	-73.21	-5.85	-79.06	-13.00	-66.06	peak	

Test Mode: GPRS1900_TX CH661

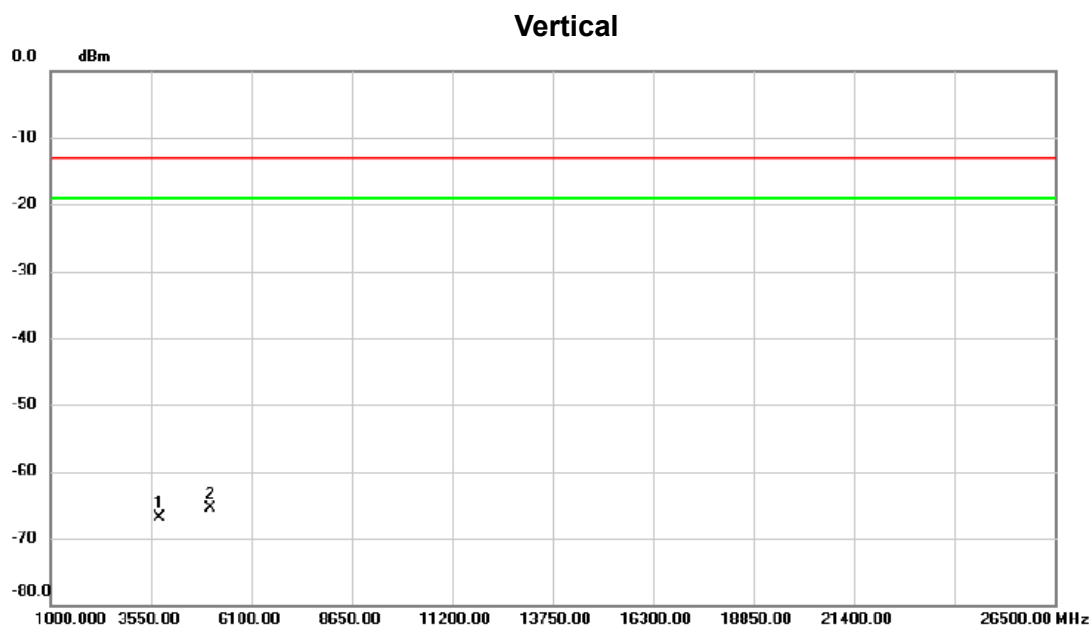


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		39.7000	-75.03	-17.22	-92.25	-13.00	-79.25	peak	
2		146.8850	-74.39	-16.85	-91.24	-13.00	-78.24	peak	
3		429.6400	-73.57	-11.90	-85.47	-13.00	-72.47	peak	
4		563.9850	-73.44	-9.36	-82.80	-13.00	-69.80	peak	
5		746.3450	-73.92	-5.99	-79.91	-13.00	-66.91	peak	
6	*	891.3600	-72.36	-5.32	-77.68	-13.00	-64.68	peak	

APPENDIX F - RADIATED EMISSION (ABOVE 1GHZ)

Test Mode:

PCS1900_TX CH661

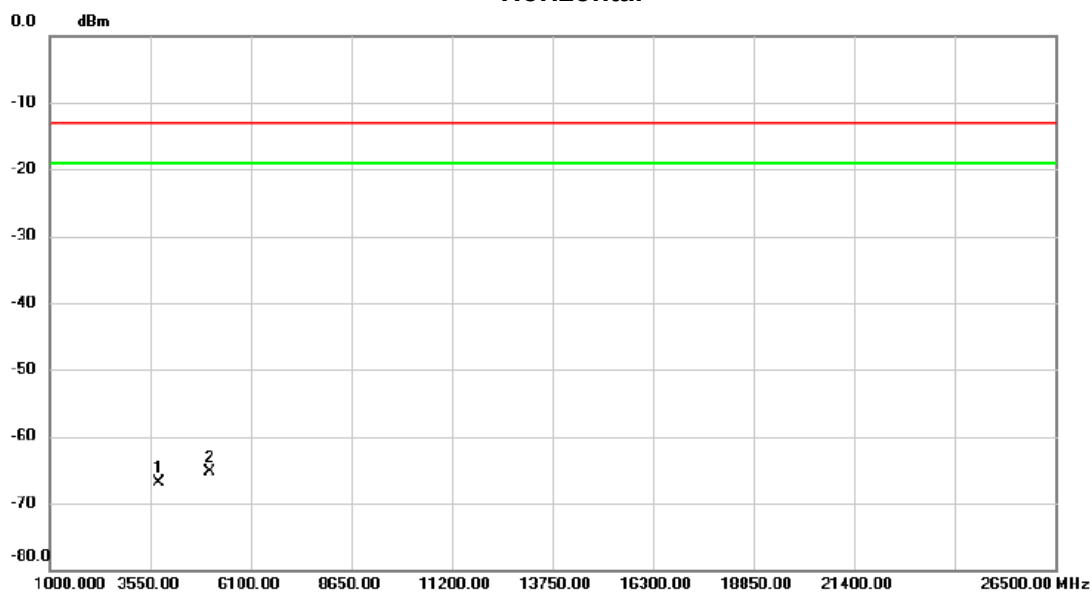


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBm	dB	dBm	dBm	dB		
1		3759.920	-52.97	-13.90	-66.87	-13.00	-53.87	peak	
2	*	5063.780	-55.78	-9.75	-65.53	-13.00	-52.53	peak	

Test Mode:

PCS1900_TX CH661

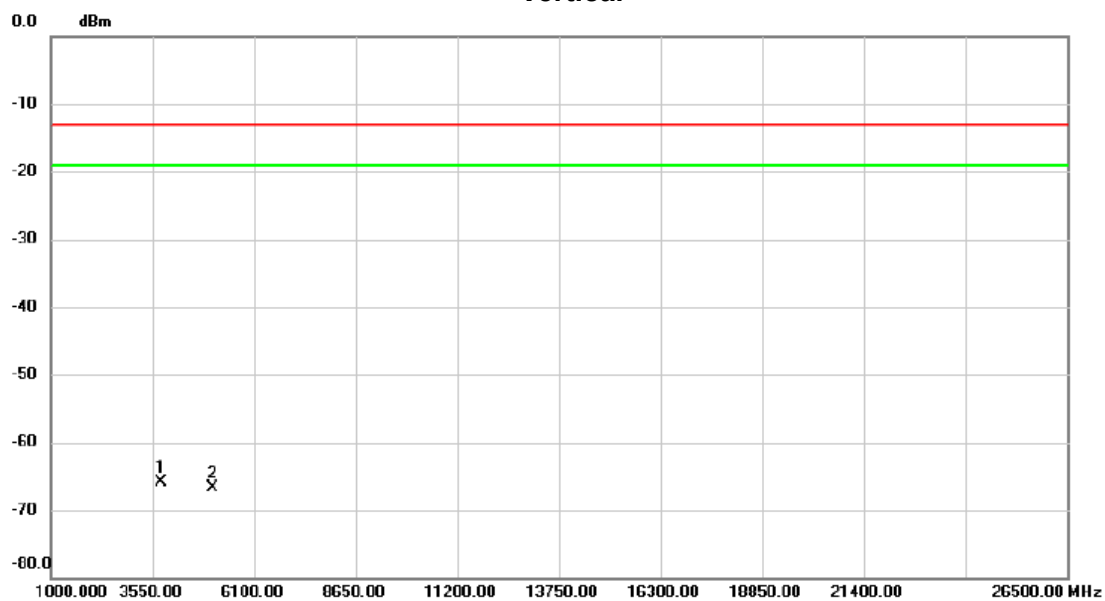
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		3760.200	-52.96	-13.90	-66.86	-13.00	-53.86	peak	
2	*	5063.700	-55.46	-9.75	-65.21	-13.00	-52.21	peak	

Test Mode: GPRS1900_TX CH661

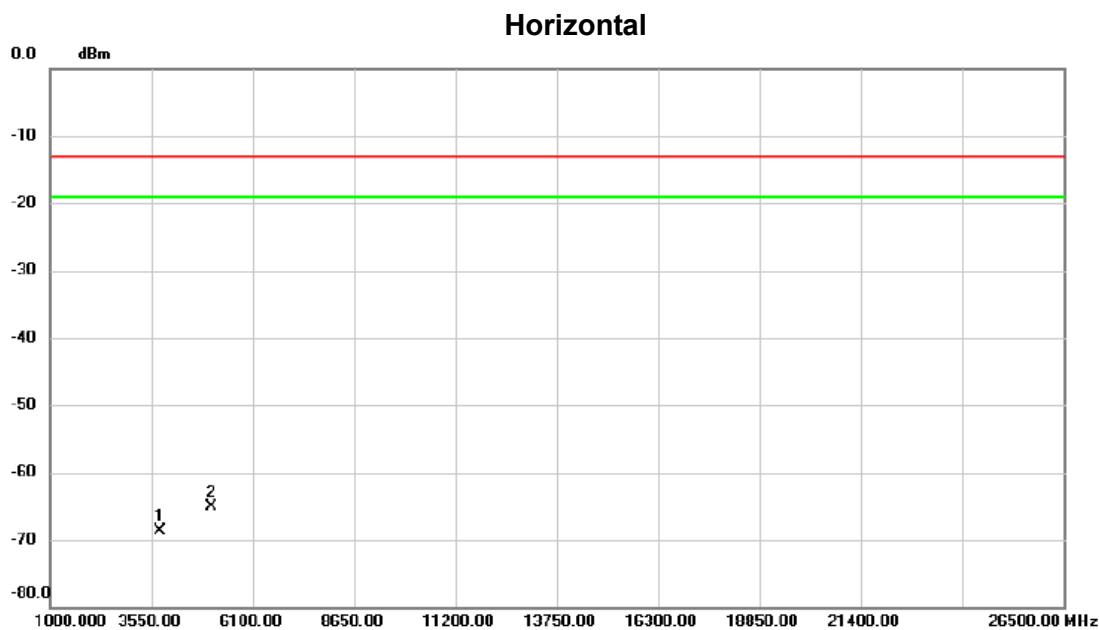
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	3760.060	-51.92	-13.90	-65.82	-13.00	-52.82	peak	
2		5066.510	-56.87	-9.74	-66.61	-13.00	-53.61	peak	

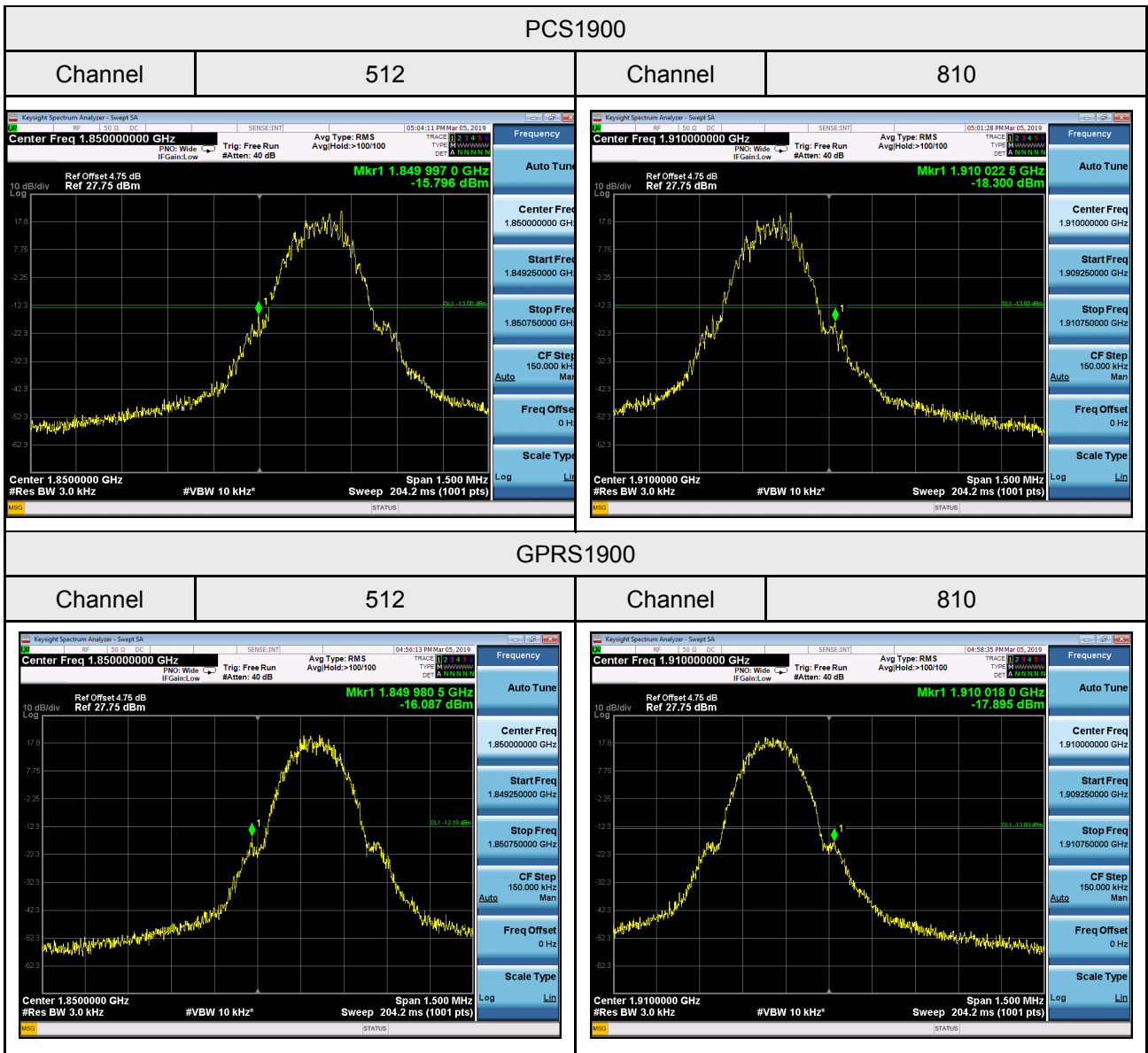
Test Mode:

GPRS1900_TX CH661



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBm	dB	dBm	dBm	dB	Detector	Comment
1		3758.955	-54.86	-13.90	-68.76	-13.00	-55.76	peak	
2	*	5066.140	-55.44	-9.74	-65.18	-13.00	-52.18	peak	

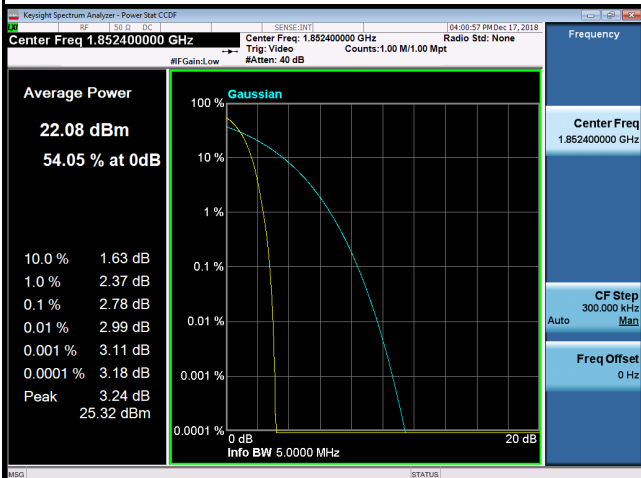
APPENDIX G - BAND EDGE



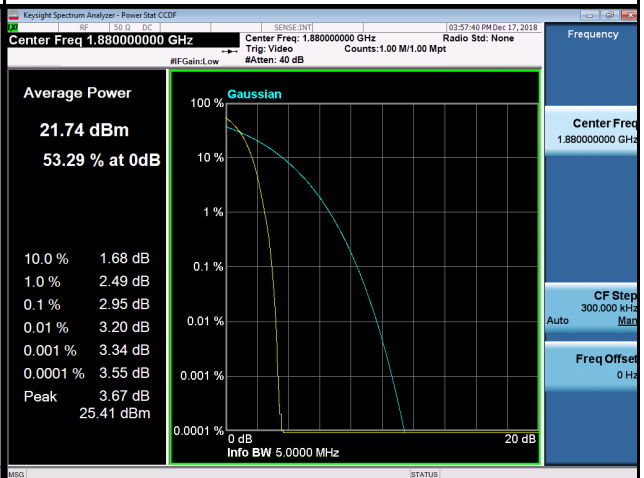
APPENDIX H - PEAK TO AVERAGE RATIO

PCS1900

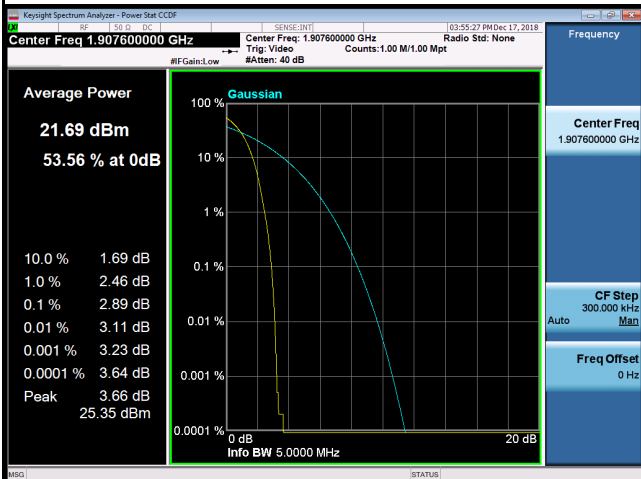
512



661



810



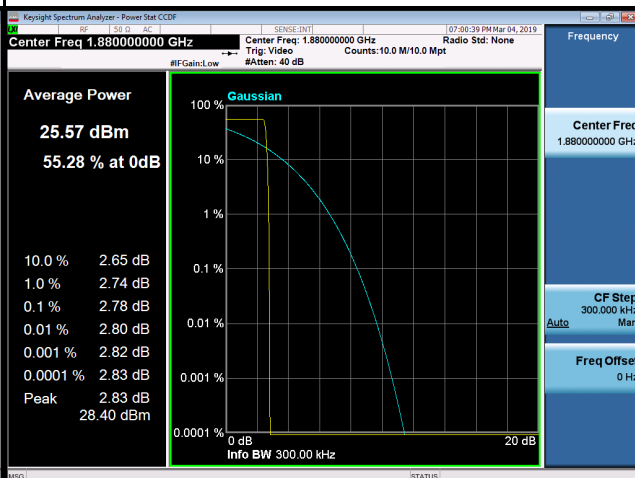
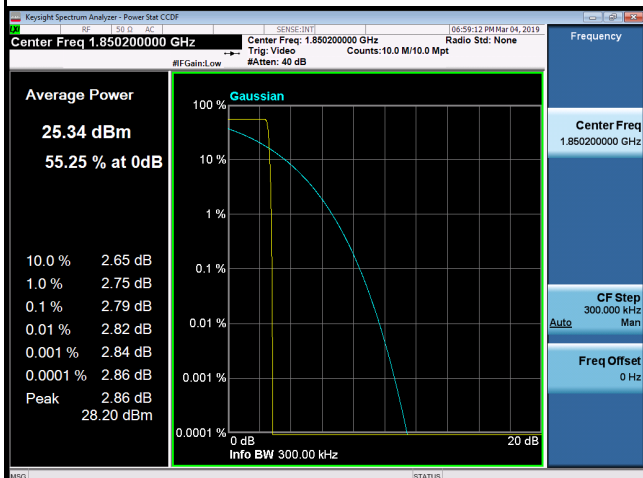
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GPRS1900

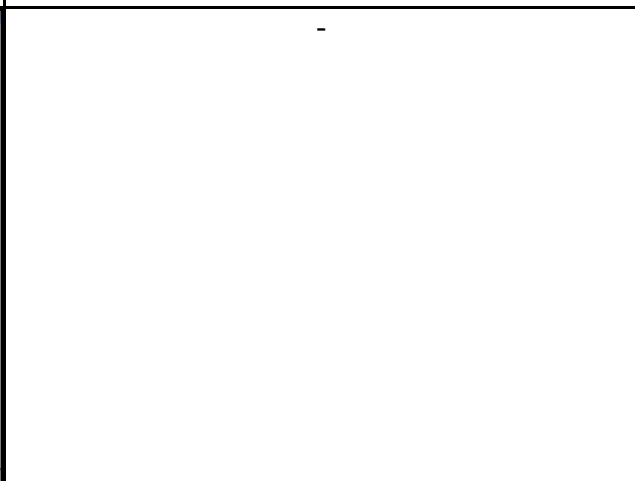
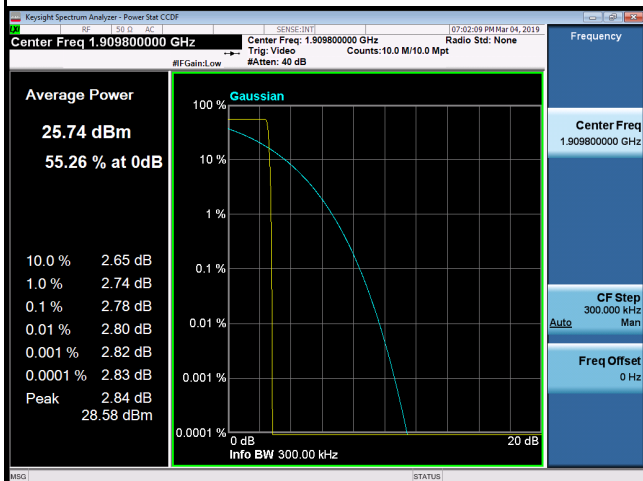
512

661



810

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APPENDIX I - FREQUENCY STABILITY

Test Mode:	PCS1900_CH661
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
-10	5.43	0.002888298	±2.5
0	2.47	0.00131383	
10	8.33	0.004430851	
20	7.61	0.004047872	
30	6.27	0.003335106	
40	7.19	0.003824468	
50	8.36	0.004446809	
55	6.76	0.003595745	
Max. Deviation (ppm)	8.36	0.004446809	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
3.42	5.72	0.003042553	±2.5
3.80	3.58	0.001904255	
4.18	7.04	0.003744681	
Max. Deviation (ppm)	7.04	0.003744681	

End of Test Report