

FCC Test Report

(PART 24)

Report No.: RF171019C18-4

FCC ID: MSQA007A

Test Model: ASUS_A007

Received Date: Jun. 26, 2017

Test Date: Jul. 04, 2017 ~ Oct. 25, 2017

Issued Date: Nov. 07, 2017

Applicant: ASUSTek COMPUTER INC.

Address: 4F, No. 150, LI-TE Rd., PEITOU, TAIPEI 112, TAIWAN

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
(R.O.C)

Test Location (1): No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan
Hsien 333, Taiwan, R.O.C.

Test Location (2): No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan,
R.O.C

**FCC Registration /
Designation Number:** 427177 / TW0011



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results.....	5
2.1 Measurement Uncertainty.....	5
2.2 Test Site And Instruments	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Configuration of System under Test.....	8
3.2.1 Description of Support Units	8
3.3 Test Mode Applicability and Tested Channel Detail	9
3.4 EUT Operating Conditions	10
3.5 General Description of Applied Standards.....	10
4 Test Types and Results	11
4.1 Output Power Measurement.....	11
4.1.1 Limits of Output Power Measurement	11
4.1.2 Test Procedures.....	11
4.1.3 Test Setup.....	12
4.1.4 Test Results	12
4.2 Frequency Stability Measurement	14
4.2.1 Limits of Frequency Stability Measurement.....	14
4.2.2 Test Procedure	14
4.2.3 Test Setup.....	14
4.2.4 Test Results	15
4.3 Occupied Bandwidth Measurement.....	17
4.3.1 Test Procedure	17
4.3.2 Test Setup.....	17
4.3.3 Test Result	17
4.4 Band Edge Measurement	18
4.4.1 Limits of Band Edge Measurement	18
4.4.2 Test Setup.....	18
4.4.3 Test Procedures.....	18
4.4.4 Test Results	19
4.5 Peak to Average Ratio	20
4.5.1 Limits of Peak to Average Ratio Measurement	20
4.5.2 Test Setup.....	20
4.5.3 Test Procedures.....	20
4.5.4 Test Results	21
4.6 Conducted Spurious Emissions.....	22
4.6.1 Limits of Conducted Spurious Emissions Measurement.....	22
4.6.2 Test Setup.....	22
4.6.3 Test Procedure	22
4.6.4 Test Results	23
4.7 Radiated Emission Measurement.....	25
4.7.1 Limits of Radiated Emission Measurement	25
4.7.2 Test Procedure	25
4.7.3 Deviation from Test Standard	25
4.7.4 Test Setup.....	25
4.7.5 Test Results	26
5 Pictures of Test Arrangements.....	38
Appendix – Information on the Testing Laboratories	39

Release Control Record

Issue No.	Description	Date Issued
RF171019C18-4	Original Release	Nov. 07, 2017

1 Certificate of Conformity

Product: ASUS Phone

Brand: ASUS

Test Model: ASUS_A007

Sample Status: Identical Prototype

Applicant: ASUSTek COMPUTER INC.

Test Date: Jul. 04, 2017 ~ Oct. 25, 2017

Standards: FCC Part 24, Subpart E

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Evonne Liu, **Date:** Nov. 07, 2017
Evonne Liu / Specialist

Approved by : Dylan Chiou, **Date:** Nov. 07, 2017
Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 24 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 24.232	Effective Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1046 24.232(d)	Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1055 24.235	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 24.238(b)	Occupied Bandwidth	Pass	Meet the requirement of limit.
24.238(b)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 24.238	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.52 dB at 5640.00 MHz and 5729.40 MHz.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Feb. 17, 2017	Feb. 16, 2018
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 16, 2016	Dec. 15, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 26, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2016	Dec. 13, 2017
Double Ridge Guide Horn Antenna EMCO	3115	5619	Dec. 15, 2016	Dec. 14, 2017
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 13, 2016	Dec. 12, 2017
Agilent Communications Tester-Wireless	8960 Series 10	MY53201073	Jun. 28, 2017	Jun. 27, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 21, 2016 Oct. 20, 2017	Oct. 20, 2017 Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 21, 2016 Oct. 20, 2017	Oct. 20, 2017 Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 21, 2016 Oct. 13, 2017	Oct. 20, 2017 Oct. 12, 2018
Power Meter Anritsu	ML2495A	1145013	Mar. 07, 2017	Mar. 06, 2018
Power Sensor Anritsu	MA2411B	1126085	Mar. 07, 2017	Mar. 06, 2018
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 21, 2016 May 23, 2017	Oct. 20, 2017 May 22, 2018
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 21, 2016 May 23, 2017	Oct. 20, 2017 May 22, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 21, 2016 May 23, 2017	Oct. 20, 2017 May 22, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer	MT8820C	6201300640	Aug. 10, 2015 Aug. 16, 2017	Aug. 09, 2017 Aug. 15, 2019
Temperature & Humidity Chamber	GTH-120-40-CP-A R	MAA1306-019	Sep. 02, 2016 Sep. 08, 2017	Sep. 01, 2017 Sep. 07, 2018
Digital Multimeter Fluke	87-III	70360742	Jul. 01, 2016 Jun. 30, 2017	Jun. 30, 2017 Jun. 29, 2018

- Note:
1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 10.
 3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
 4. The FCC Site Registration No. is 690701.
 5. The IC Site Registration No. is IC7450F-10.

3 General Information

3.1 General Description of EUT

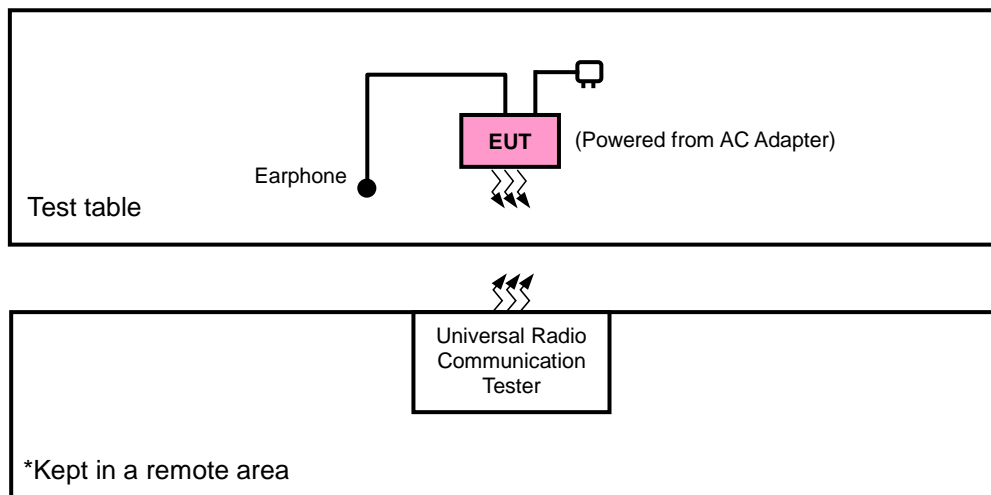
Product	ASUS Phone	
Brand	ASUS	
Test Model	ASUS_A007	
Status of EUT	Identical Prototype	
Power Supply Rating	3.85 Vdc (Battery) 5.2 Vdc (Adapter)	
Modulation Type	GSM/GPRS	GMSK
	EDGE	GMSK, 8PSK
Frequency Range	GSM/GPRS/EDGE	1850.2 ~ 1909.8 MHz
Max. EIRP Power	GSM/GPRS	637.38 mW
	EDGE	0.32 mW
Emission Designator	GSM/GPRS	247KGXW
	EDGE	246KG7W
Antenna Type	Fixed Internal Antenna	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

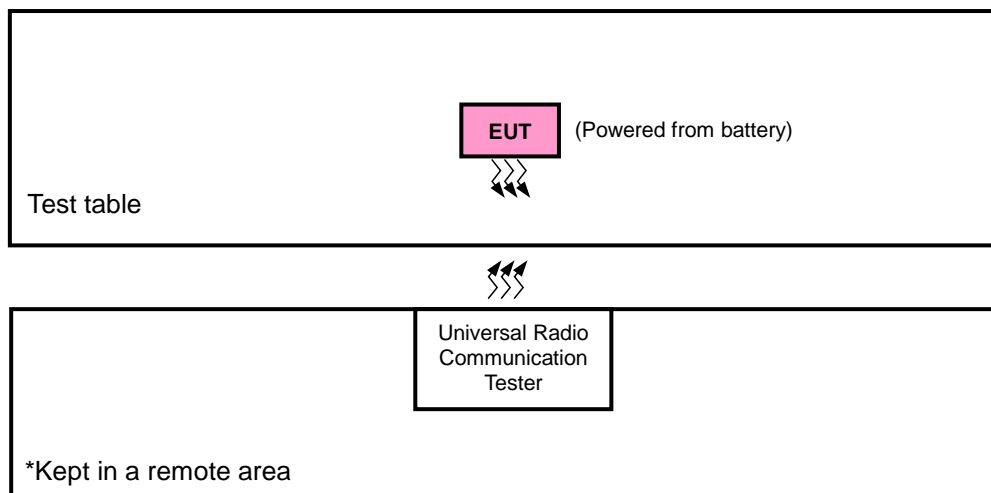
1. The EUT's accessories list refers to Ext. Pho.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test

<Radiated Emission Test>



<E.I.R.P. Test>



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, and antenna ports.

The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	EIRP	Radiated Emission
GSM	Z-plane	Z-axis
EDGE	X-plane	Y-axis

GSM

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	512 to 810	512, 661, 810	GSM, EDGE
-	Frequency Stability	512 to 810	512, 810	GSM, EDGE
-	Occupied Bandwidth	512 to 810	512, 661, 810	GSM, EDGE
-	Band Edge	512 to 810	512, 810	GSM, EDGE
-	Peak to Average Ratio	512 to 810	512, 661, 810	GSM, EDGE
-	Conducuted Emission	512 to 810	512, 661, 810	GSM, EDGE
-	Radiated Emission	512 to 810	512, 661, 810	GSM, EDGE

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	26 deg. C, 58 % RH	3.85 Vdc	Karl Lee
Frequency Stability	26 deg. C, 58 % RH	3.85 Vdc	Anson Lin
Occupied Bandwidth	26 deg. C, 58 % RH	3.85 Vdc	Anson Lin
Band Edge	26 deg. C, 58 % RH	3.85 Vdc	Anson Lin
Peak to Average Ratio	26 deg. C, 58 % RH	3.85 Vdc	Anson Lin
Conducuted Emission	26 deg. C, 58 % RH	3.85 Vdc	Anson Lin
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-D 2010

NOTE: All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

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

4.1.2 Test Procedures

EIRP / ERP Measurement:

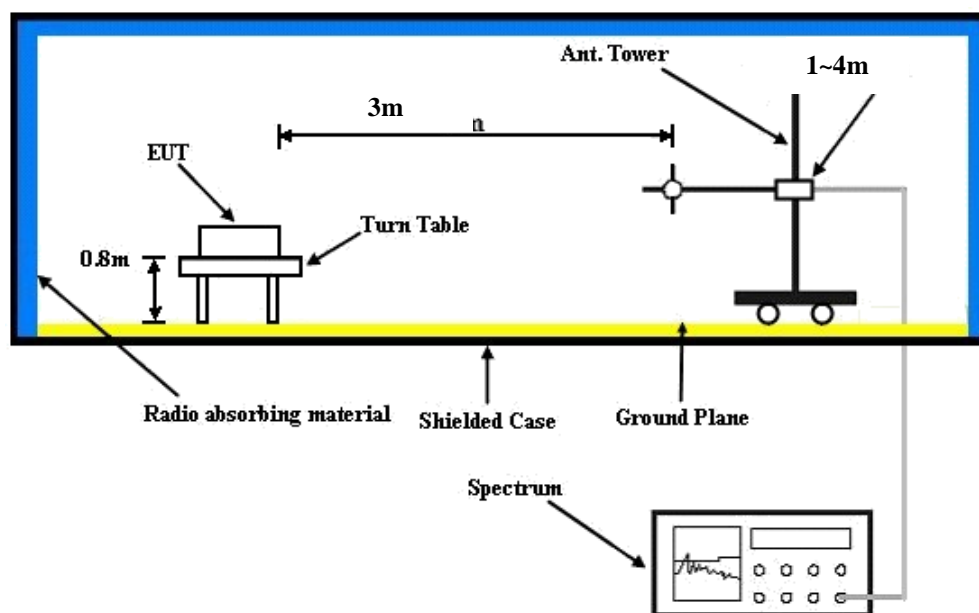
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1 MHz for GSM, GPRS & EDGE, 5 MHz for WCDMA and CDMA, and 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m height of 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.
- c. 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 b. Record the power level of S.G.
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}$.

Conducted Power Measurement:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE 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 Test Setup

EIRP / ERP Measurement:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GSM (GMSK, 1Tx-slot)	30.47	30.48	30.43
GPRS (GMSK, 1Tx-slot)	30.35	30.36	30.31
GPRS (GMSK, 2Tx-slot)	30.32	30.33	30.28
EDGE (8PSK, 1Tx-slot)	25.97	25.98	25.93
EDGE (8PSK, 2Tx-slot)	25.93	25.94	25.89

EIRP Power (dBm)

GSM							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Z	512	1850.2	-9.47	36.57	27.10	513.10	H
	661	1880.0	-9.18	37.22	28.04	637.38	
	810	1909.8	-9.33	37.18	27.85	609.82	
	512	1850.2	-16.24	37.65	21.41	138.39	V
	661	1880.0	-16.15	37.58	21.43	139.09	
	810	1909.8	-16.21	37.48	21.27	133.97	

EDGE							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	512	1850.2	-13.16	38.19	25.03	0.32	H
	661	1880.0	-13.64	38.70	25.06	0.32	
	810	1909.8	-14.32	39.35	25.03	0.32	
	512	1850.2	-18.44	38.48	20.04	0.10	V
	661	1880.0	-18.56	38.59	20.03	0.10	
	810	1909.8	-18.80	38.87	20.07	0.10	

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stability Measurement

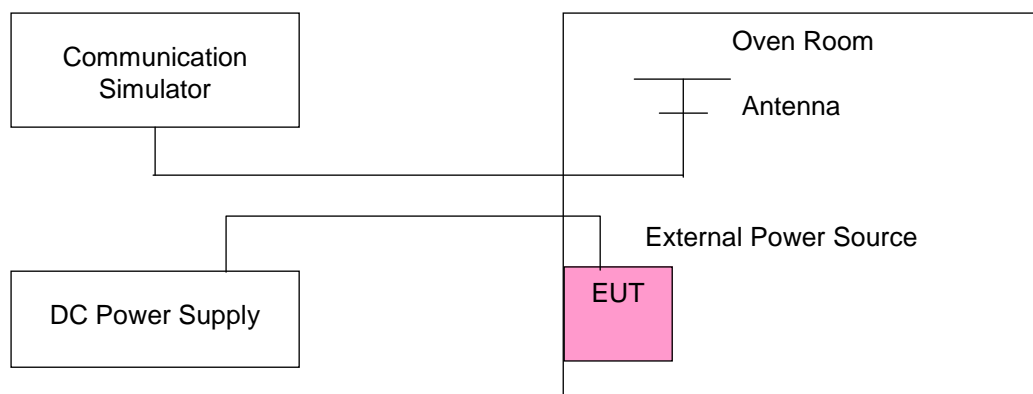
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

4.2.2 Test Procedure

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 °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.

NOTE: The frequency error was recorded frequency error from the communication simulator.

4.2.3 Test Setup



4.2.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1850.200004	0.002	1909.800001	0.001	2.5
3.60	1850.200002	0.001	1909.800002	0.001	2.5
4.20	1850.200003	0.001	1909.800001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.60 Vdc to 4.20 Vdc.

Frequency Error vs. Temperature

Temp. (°C)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1850.200002	0.001	1909.800003	0.002	2.5
-20	1850.200001	0.001	1909.800003	0.002	2.5
-10	1850.200003	0.001	1909.800001	0.001	2.5
0	1850.200004	0.002	1909.800002	0.001	2.5
10	1850.200004	0.002	1909.800004	0.002	2.5
20	1850.199996	-0.002	1909.799996	-0.002	2.5
30	1850.199999	-0.001	1909.799997	-0.002	2.5
40	1850.199997	-0.002	1909.799999	-0.001	2.5
50	1850.199998	-0.001	1909.799997	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	EDGE				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	1850.200001	0.001	1909.800002	0.001	2.5
3.60	1850.200002	0.001	1909.800002	0.001	2.5
4.20	1850.200003	0.001	1909.800002	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.60 Vdc to 4.20 Vdc.

Frequency Error vs. Temperature

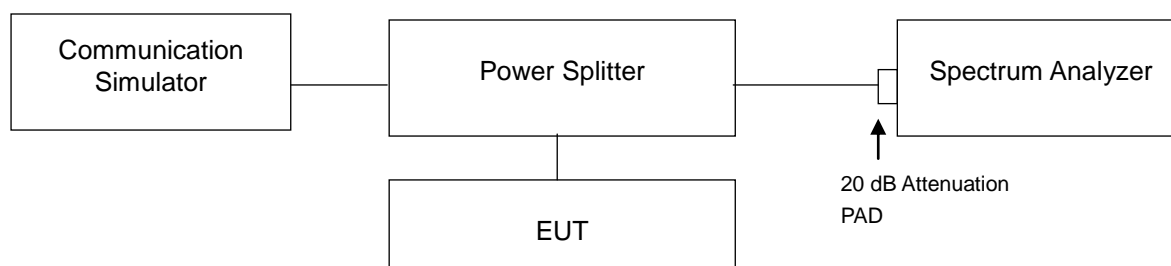
Temp. (°C)	EDGE				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1850.200003	0.002	1909.800002	0.001	2.5
-20	1850.200003	0.002	1909.800002	0.001	2.5
-10	1850.200002	0.001	1909.800004	0.002	2.5
0	1850.200003	0.002	1909.800001	0.001	2.5
10	1850.200004	0.002	1909.800002	0.001	2.5
20	1850.199997	-0.001	1909.799997	-0.002	2.5
30	1850.199998	-0.001	1909.799998	-0.001	2.5
40	1850.199996	-0.002	1909.799999	-0.001	2.5
50	1850.199998	-0.001	1909.799997	-0.002	2.5

4.3 Occupied Bandwidth Measurement

4.3.1 Test Procedure

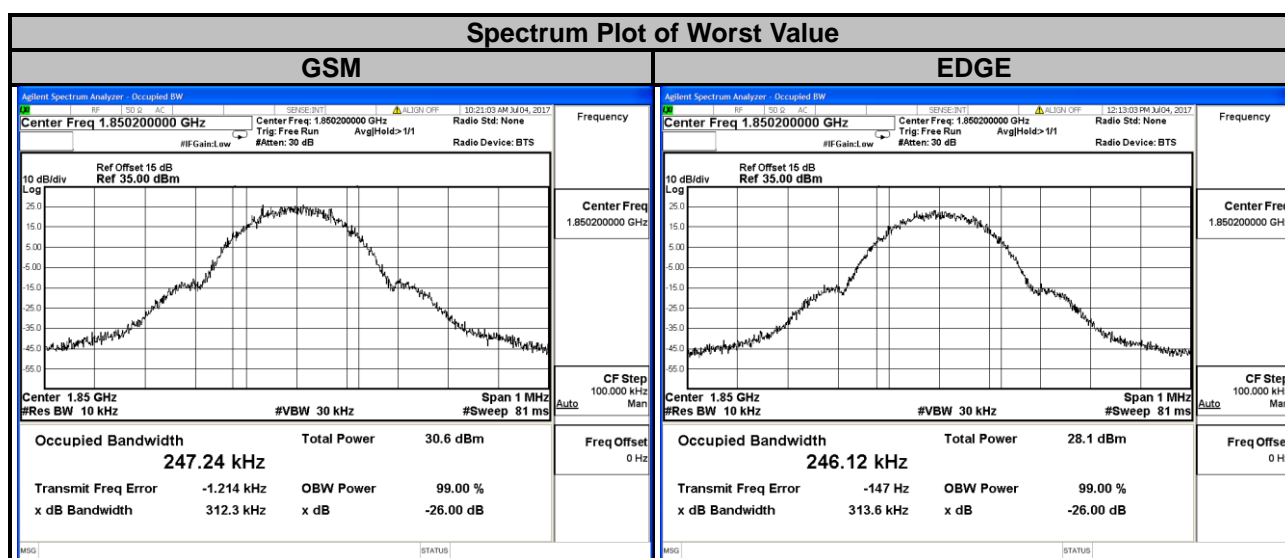
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function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

4.3.2 Test Setup



4.3.3 Test Result

Channel	Frequency (MHz)	99 % Occupied Bandwidth (kHz)	
		GSM	EDGE
512	1850.2	247.24	246.12
661	1880.0	244.75	244.80
810	1909.8	244.39	243.80

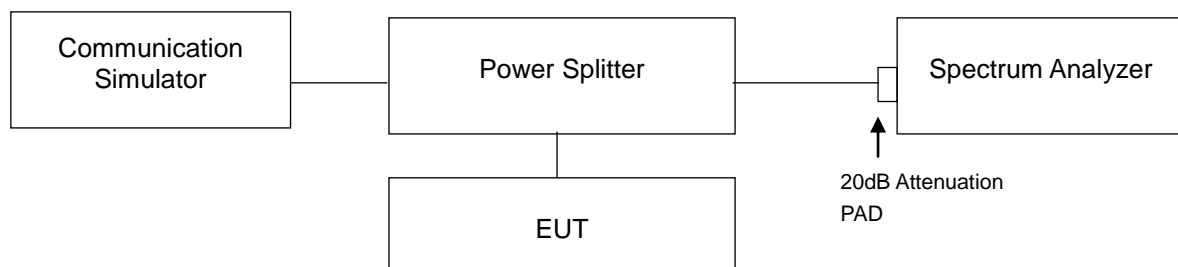


4.4 Band Edge Measurement

4.4.1 Limits of Band Edge Measurement

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.

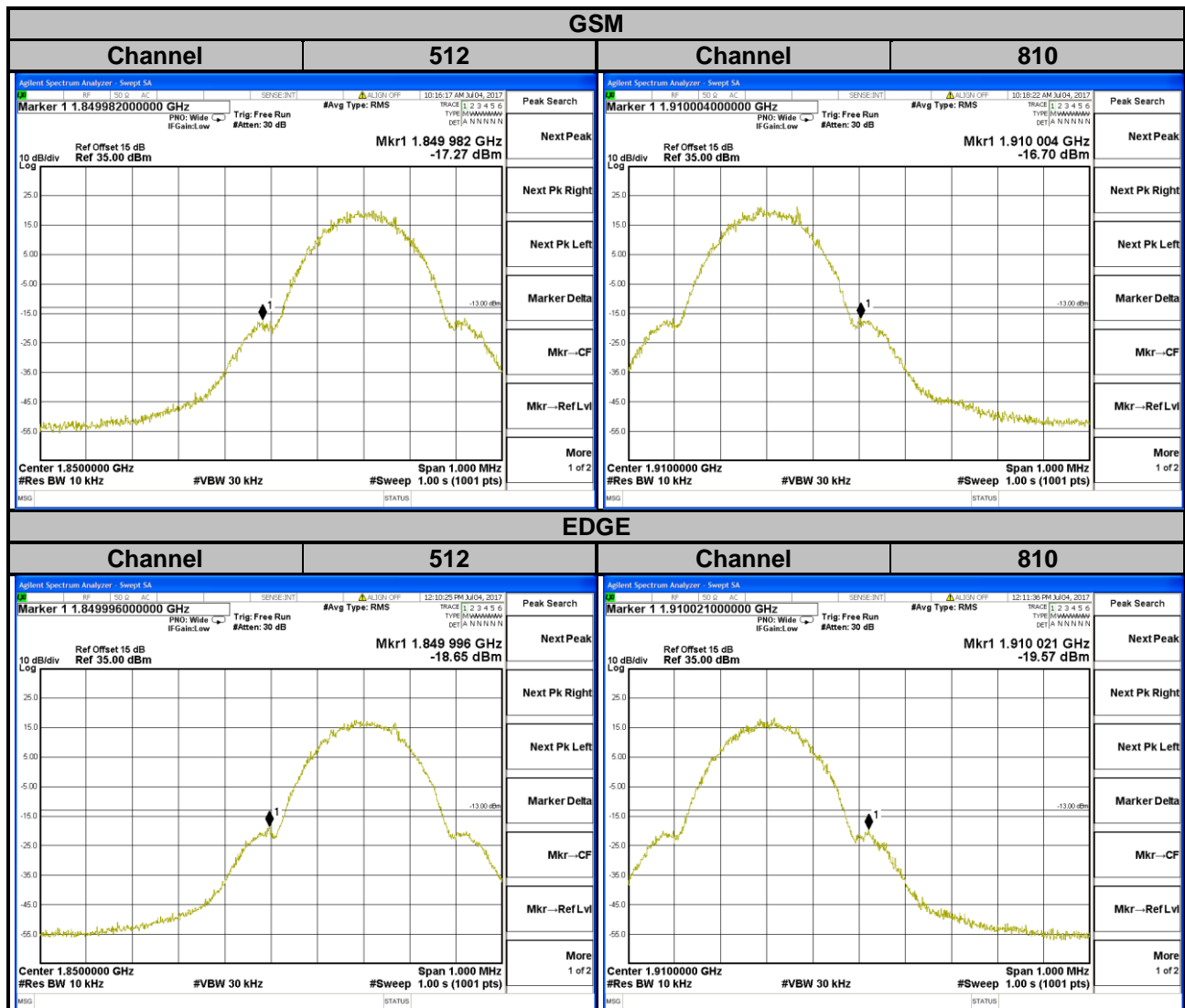
4.4.2 Test Setup



4.4.3 Test Procedures

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 10 kHz and VB of the spectrum is 30 kHz (GSM/GPRS/EDGE).
- Record the max trace plot into the test report.

4.4.4 Test Results

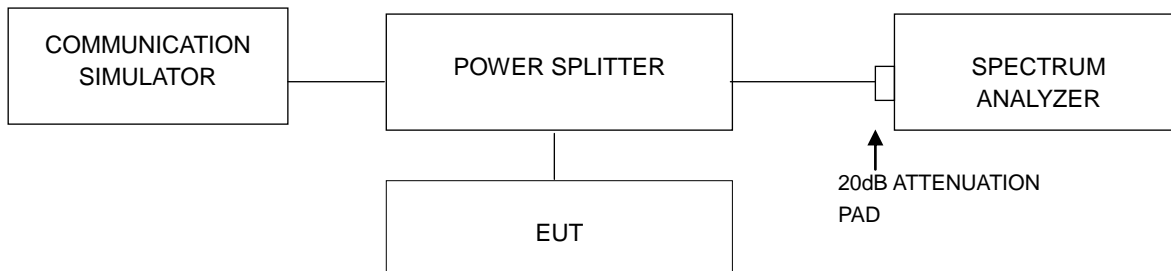


4.5 Peak to Average Ratio

4.5.1 Limits of Peak to Average Ratio Measurement

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.

4.5.2 Test Setup

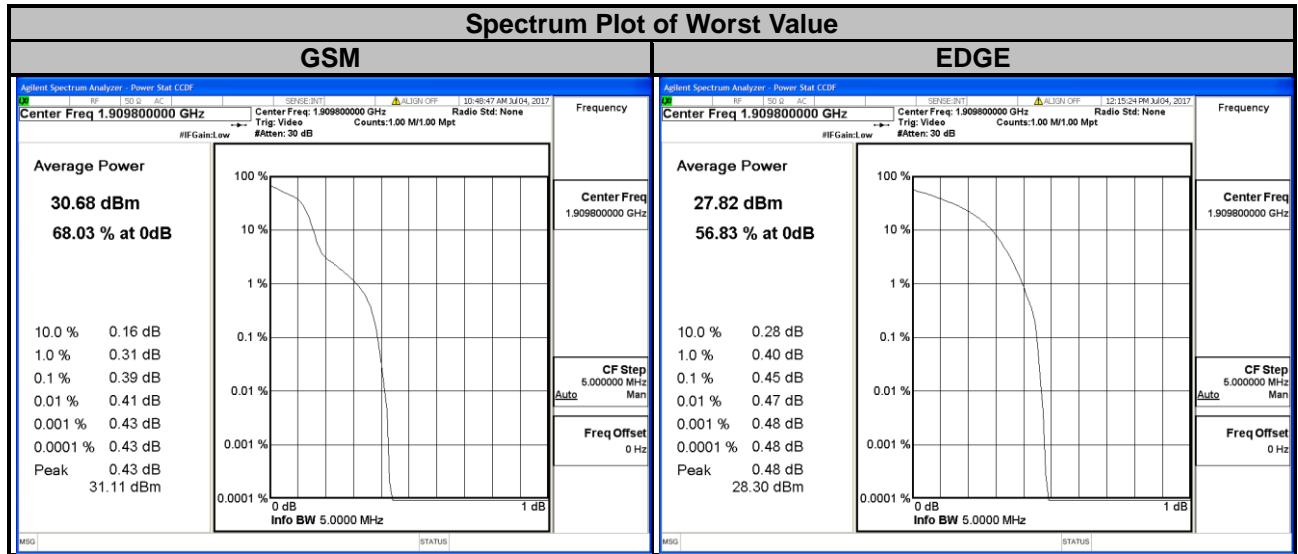


4.5.3 Test Procedures

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 %.

4.5.4 Test Results

Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		GSM	EDGE
512	1850.2	0.37	0.42
661	1880.0	0.37	0.42
810	1909.8	0.39	0.45

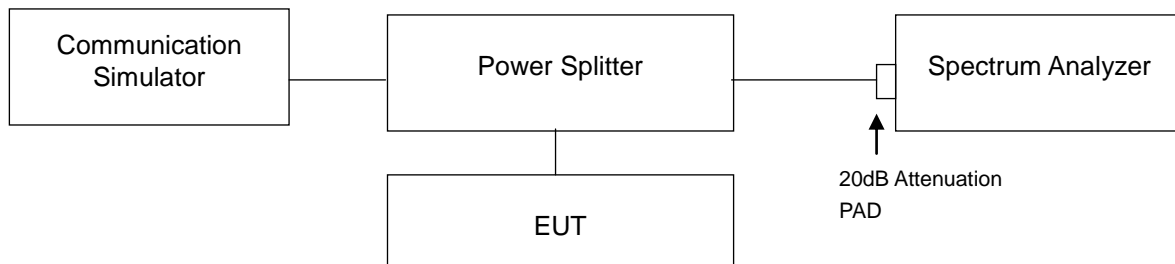


4.6 Conducted Spurious Emissions

4.6.1 Limits of Conducted Spurious Emissions Measurement

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 -13 dBm.

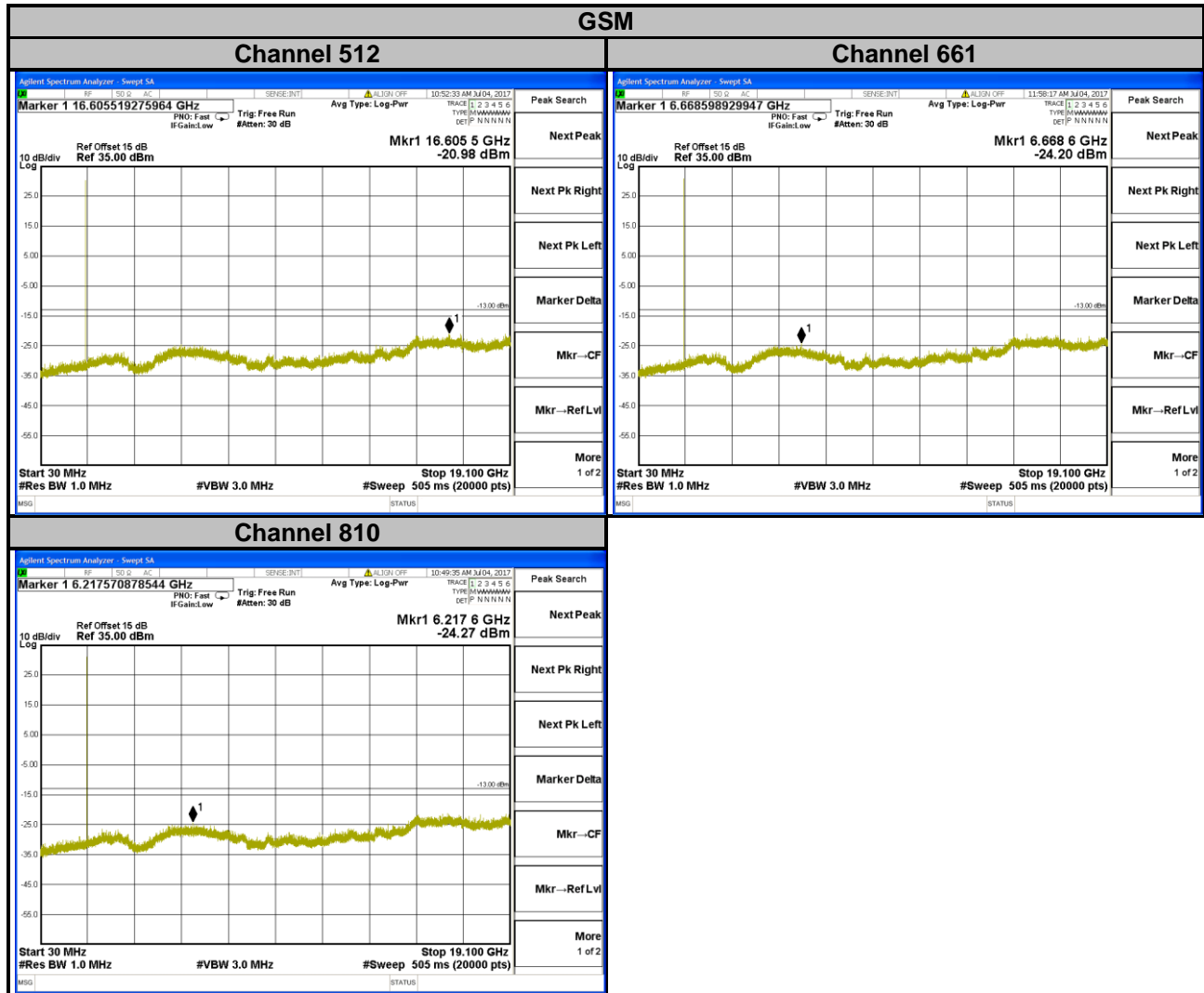
4.6.2 Test Setup



4.6.3 Test Procedure

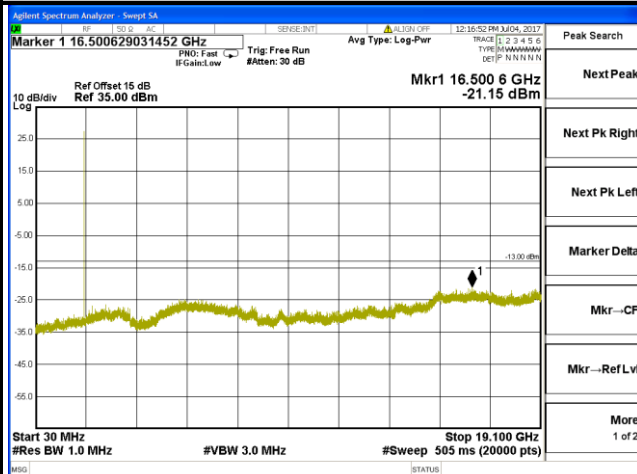
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 9 GHz. 20 dB attenuation pad is connected with spectrum. RBW=1 MHz and VBW=3 MHz is used for conducted emission measurement.

4.6.4 Test Results

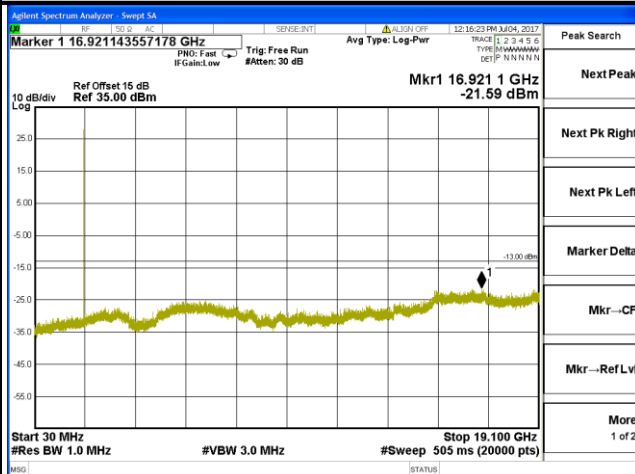


EDGE

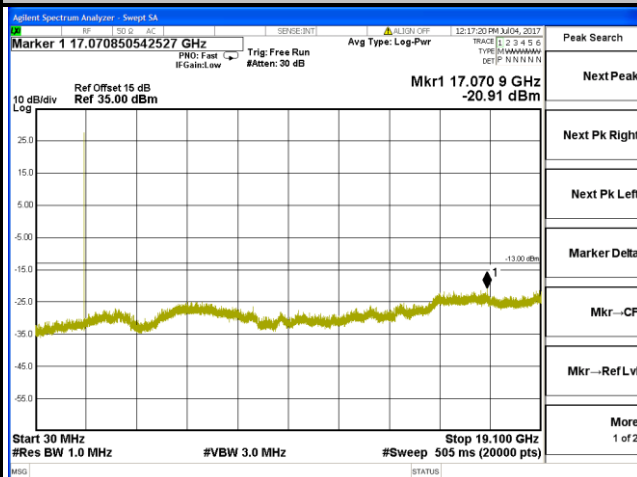
Channel 512



Channel 661



Channel 810



4.7 Radiated Emission Measurement

4.7.1 Limits of Radiated Emission Measurement

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 is equal to -13 dBm.

4.7.2 Test Procedure

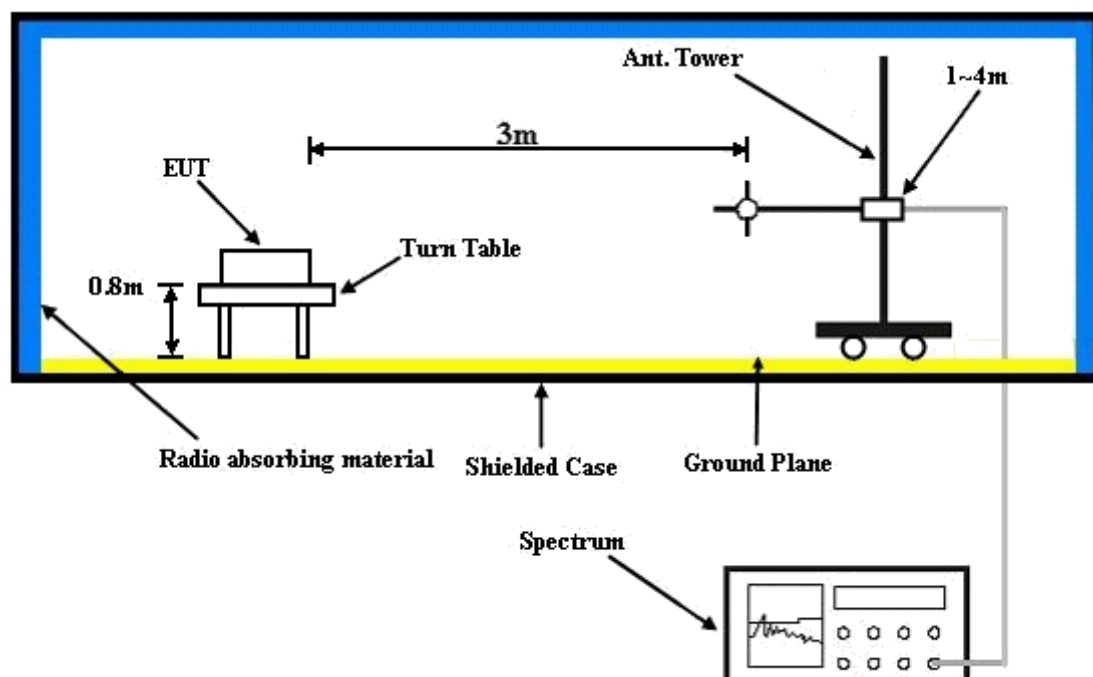
- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- 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.
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}.$

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

4.7.3 Deviation from Test Standard

No deviation.

4.7.4 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.7.5 Test Results

GSM:

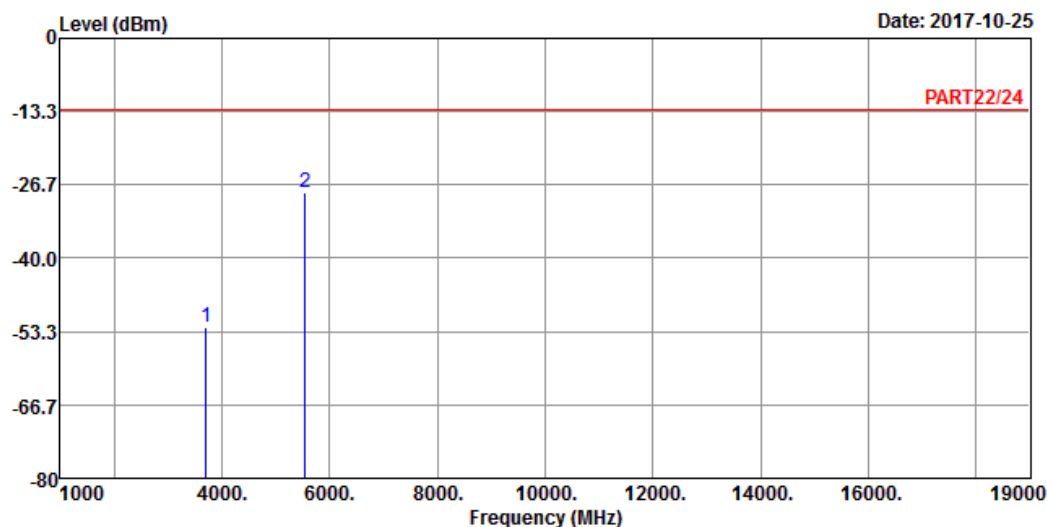
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 1

Condition: PART22/24 HORIZONTAL

Remak : PCS1900 Link_L-CH

Tested by: Harry Hsueh

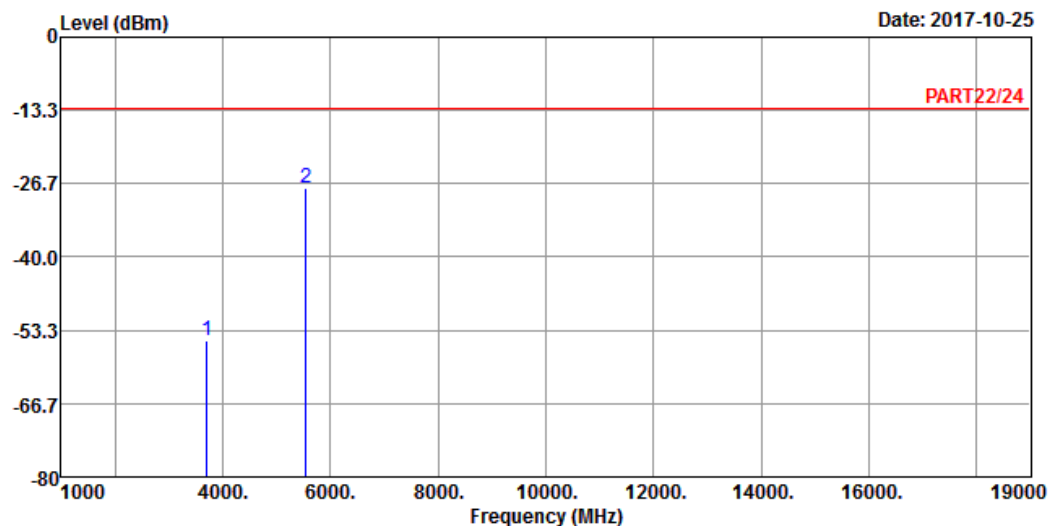
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3700.40	-52.58	-44.41	-13.00	-39.58	-8.17	Peak
2 pp	5550.60	-28.15	-26.70	-13.00	-15.15	-1.45	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 1
 Condition: PART22/24 VERTICAL
 Remak : PCS1900 Link_L-CH
 Tested by: Harry Hsueh

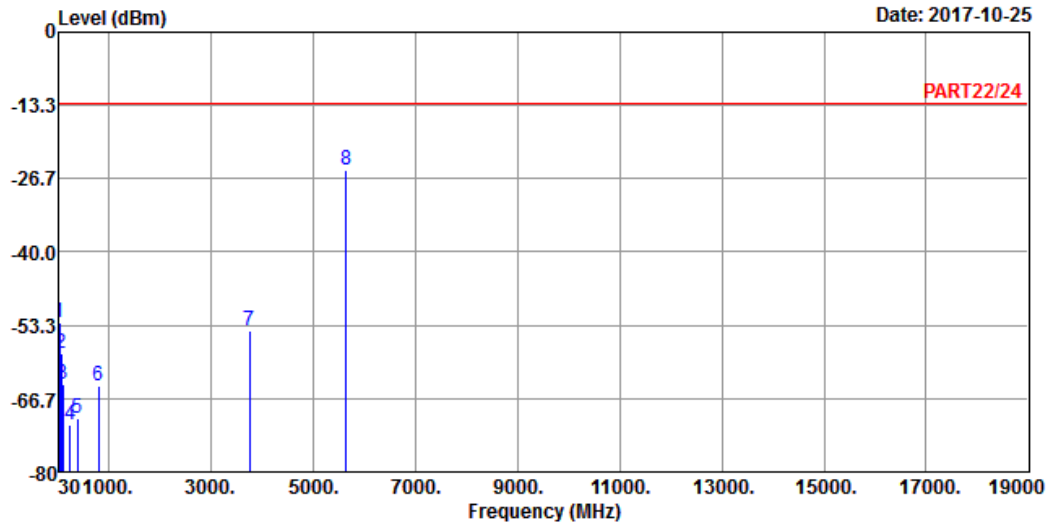
			Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark	
MHz	dBm	dBm	dBm	dB	dB		
1	3700.40	-55.12	-46.95	-13.00	-42.12	-8.17	Peak
2 pp	5550.60	-27.59	-26.14	-13.00	-14.59	-1.45	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10



Site : 966 Chamber 1
Condition: PART22/24 VERTICAL
Remak : PCS1900 Link_M-CH
Tested by: Harry Hsueh

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	39.18	-52.96	-53.06	-13.00	-39.96	0.10	Peak
2	68.61	-58.38	-50.06	-13.00	-45.38	-8.32	Peak
3	103.71	-64.14	-53.67	-13.00	-51.14	-10.47	Peak
4	244.38	-71.34	-65.11	-13.00	-58.34	-6.23	Peak
5	384.70	-70.40	-64.37	-13.00	-57.40	-6.03	Peak
6	797.00	-64.31	-65.05	-13.00	-51.31	0.74	Peak
7	3760.00	-54.38	-46.32	-13.00	-41.38	-8.06	Peak
8 pp	5640.00	-25.01	-23.07	-13.00	-12.01	-1.94	Peak

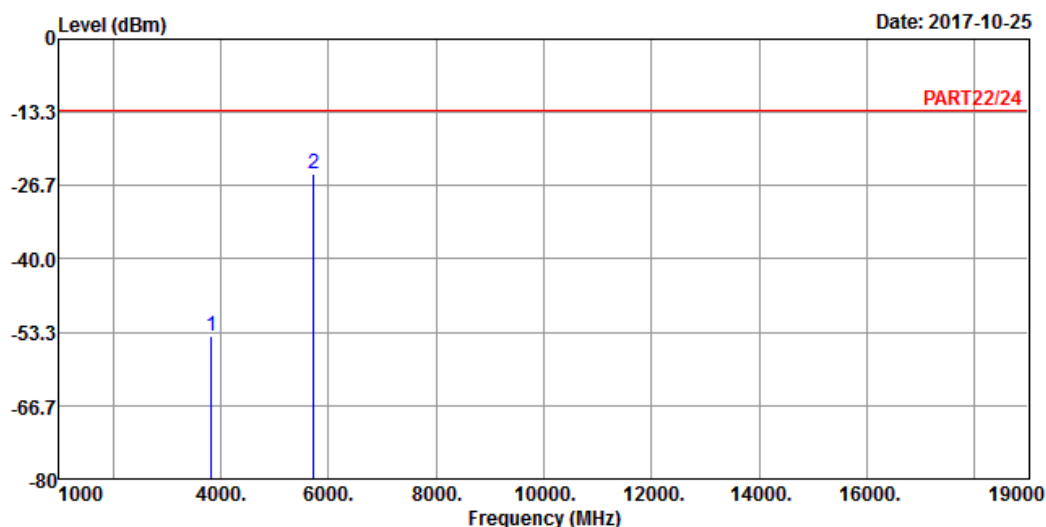
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 1

Condition: PART22/24 HORIZONTAL

Remak : PCS1900 Link_H-CH

Tested by: Harry Hsueh

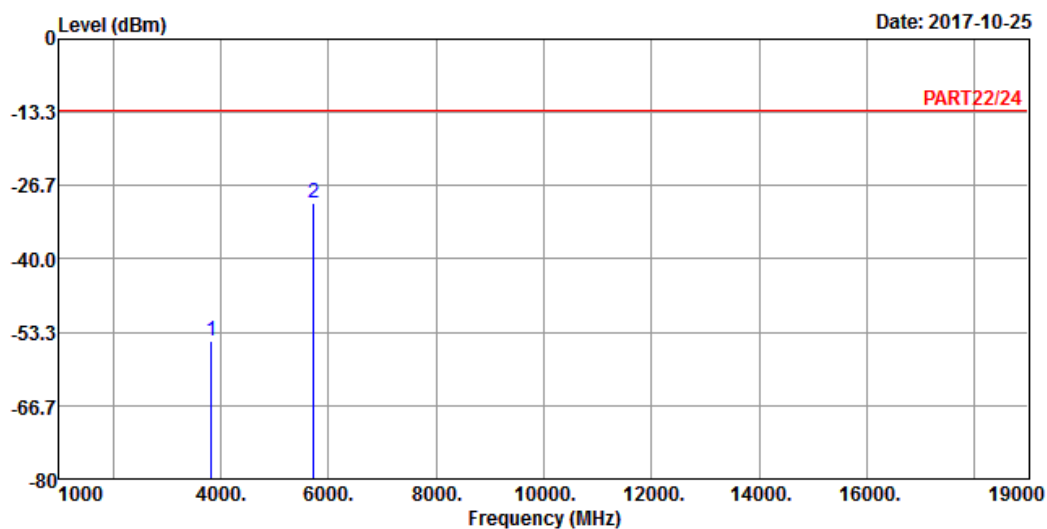
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3819.60	-54.15	-46.47	-13.00	-41.15	-7.68	Peak
2 pp	5729.40	-24.52	-22.94	-13.00	-11.52	-1.58	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 1
Condition: PART22/24 VERTICAL
Remak : PCS1900 Link_H-CH
Tested by: Harry Hsueh

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	3819.60	-55.02	-47.34	-13.00	-42.02	-7.68	Peak
2 pp	5729.40	-29.82	-28.24	-13.00	-16.82	-1.58	Peak

EDGE:
Low Channel

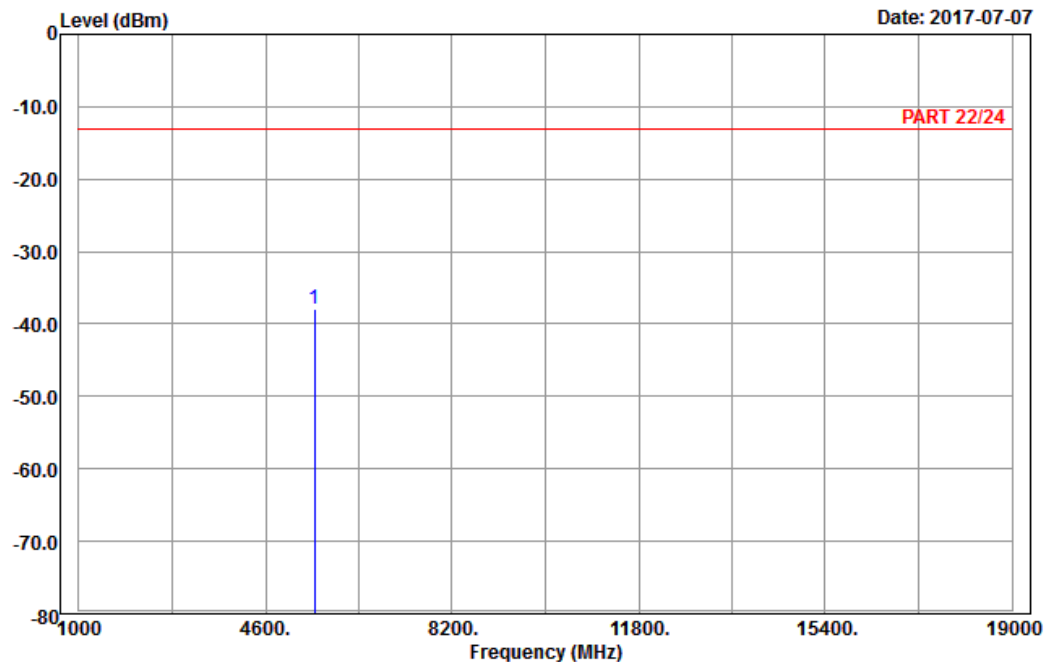


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9

Date: 2017-07-07



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : EDGE 1900_Link_CH512
Tested by: Charles Hsiao

Freq	Level	Read	Limit	Over	Factor	Remark
		Level	Line	Limit		
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5550.60	-38.02	-58.36	-13.00	-25.02	20.34	Peak

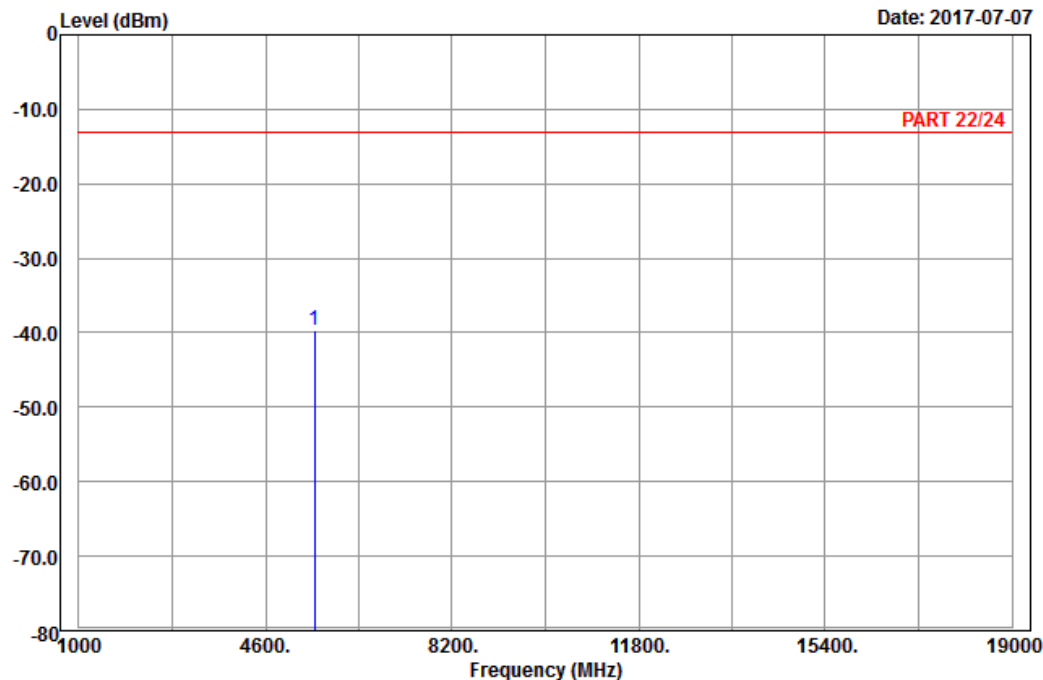


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2017-07-07



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : EDGE 1900_Link_CH512
Tested by: Charles Hsiao

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5550.60	-39.74	-60.08	-13.00	-26.74	20.34	Peak

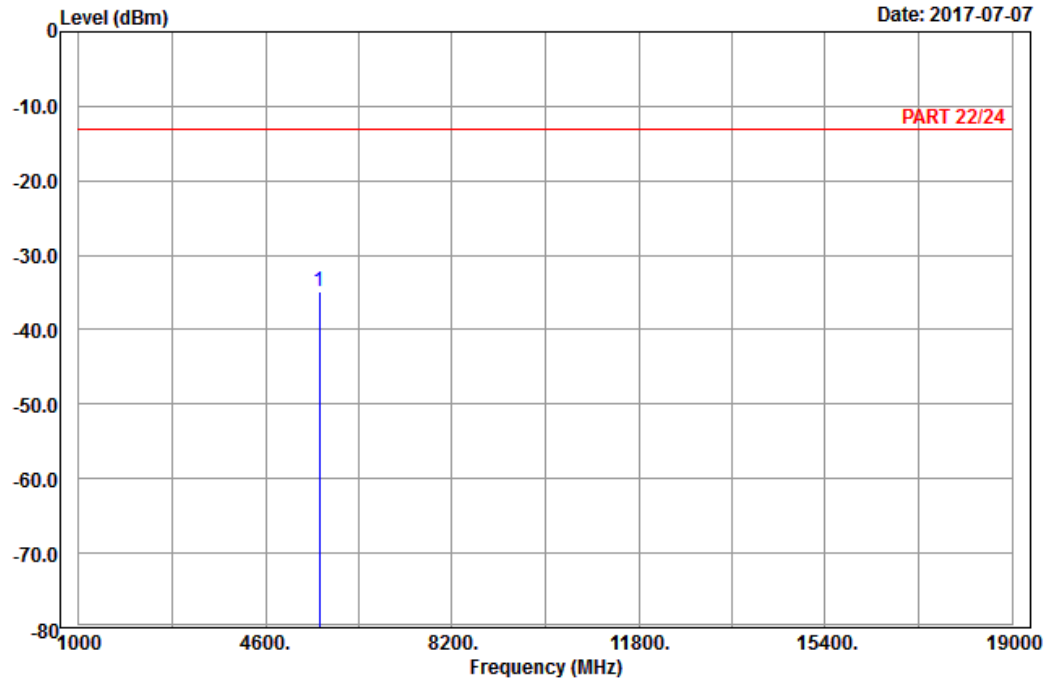
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 9



Site : 966 chamber 1
 Condition: PART 22/24 Horizontal
 Remark : EDGE 1900_Link_CH661
 Tested by: Charles Hsiao

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5640.00	-34.85	-55.32	-13.00	-21.85	20.47	Peak

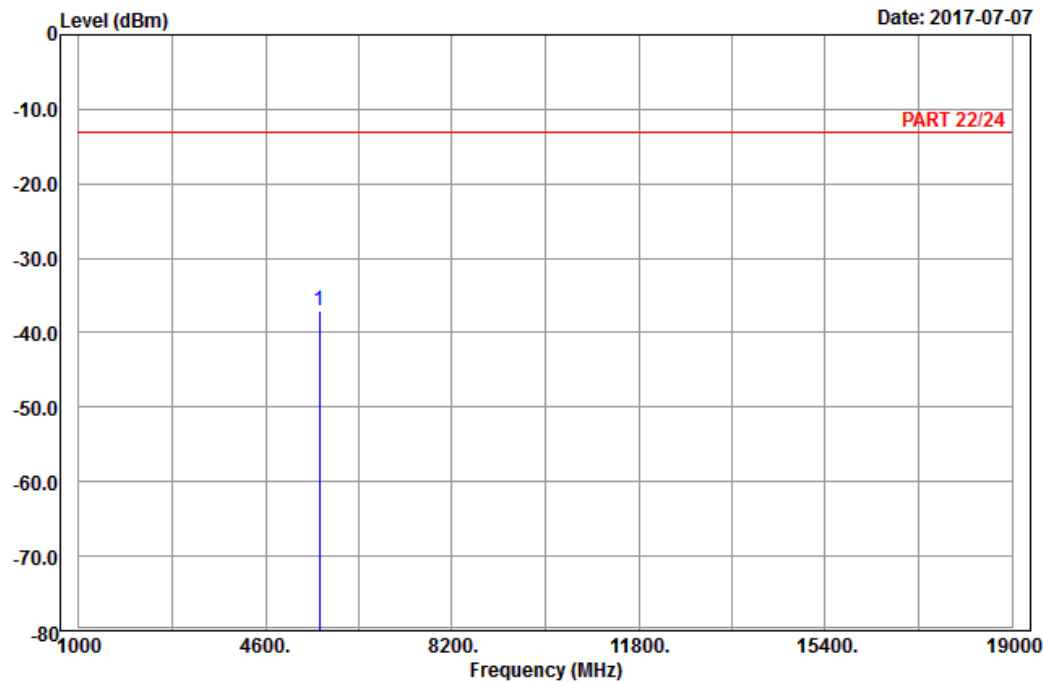


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2017-07-07



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : EDGE 1900_Link_CH661
Tested by: Charles Hsiao

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5640.00	-36.99	-57.46	-13.00	-23.99	20.47	Peak

High Channel

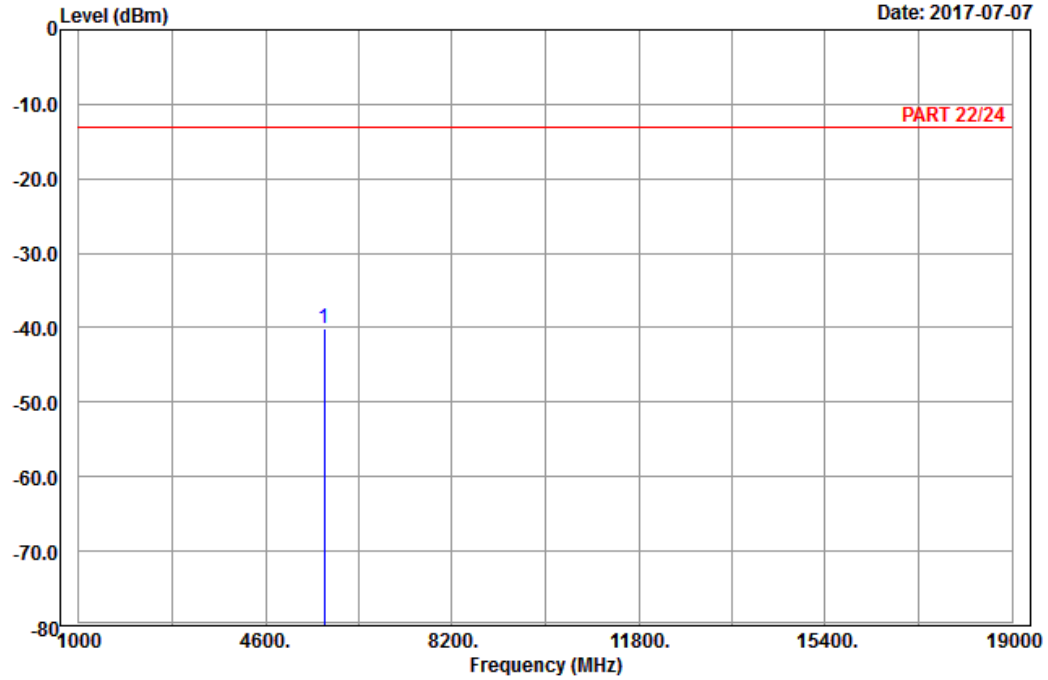


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 9

Date: 2017-07-07



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : EDGE 1900_Link_CH810
Tested by: Charles Hsiao

Freq	Level	Read	Limit	Over	Factor	Remark
		Level	Line	Limit		
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5729.40	-40.01	-60.35	-13.00	-27.01	20.34	Peak

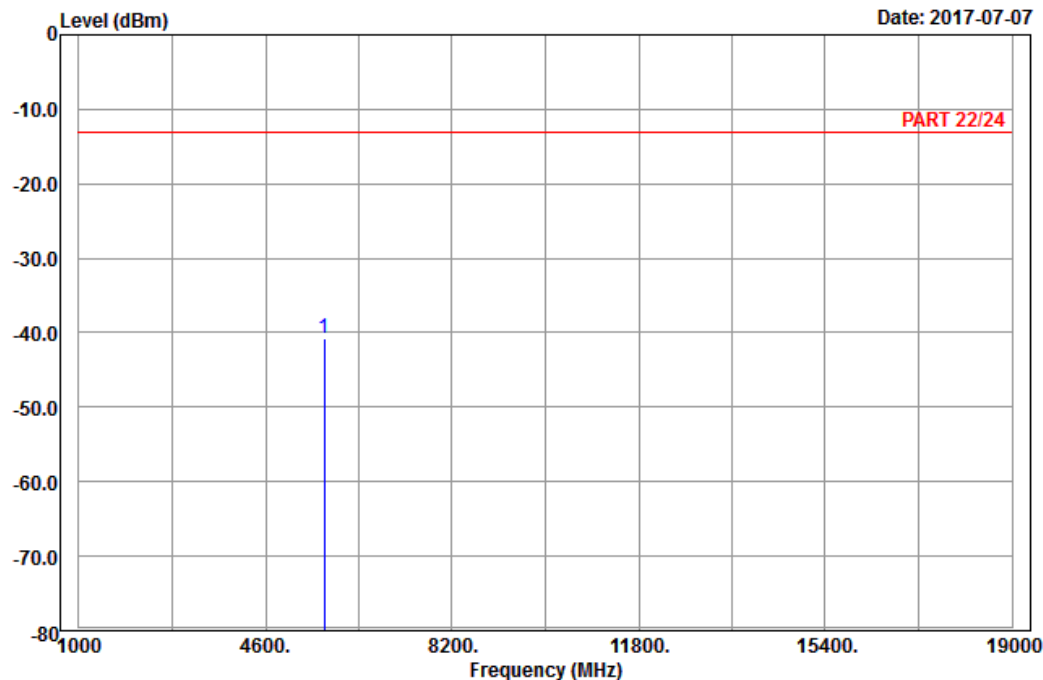


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 10

Date: 2017-07-07



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : EDGE 1900_Link_CH810
Tested by: Charles Hsiao

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 5729.40	-40.80	-61.14	-13.00	-27.80	20.34	Peak

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

--- END ---