

FCC TEST REPORT

(PART 27)

REPORT NO.: RF141119C42-1
MODEL NO.: 9961 Home Cell V1
FCC ID: H8N9961V1
RECEIVED: Nov. 19, 2014
TESTED: Dec. 09 ~ Dec. 12, 2014
ISSUED: Dec. 15, 2014

APPLICANT: ASKEY COMPUTER CORP.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141119C42-1	Original release	Dec. 15, 2014

1 CERTIFICATION

PRODUCT: Femtocell
MODEL NO.: 9961 Home Cell V1
BRAND: Askey
APPLICANT: ASKEY COMPUTER CORP.
TESTED: Dec. 09 ~ Dec. 12, 2014
TEST SAMPLE: ENGINEERING SAMPLE
TEST STANDARDS: **FCC Part 27**
FCC Part 2

The above equipment (model: 9961 Home Cell V1) 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 :  , **DATE:** Dec. 15, 2014
Pettie Chen / Senior Specialist

APPROVED BY :  , **DATE:** Dec. 15, 2014
Dylan Chiou / Project Engineer

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 27 & Part 2			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 27.50(d)(4)	Equivalent Isotropically radiated power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	PASS	Meet the requirement of limit.
2.1049 27.53(h)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(h)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(h)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 4305.0MHz.

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	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

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

2.2 TEST SITE AND INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 06, 2014	Oct. 05, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSU 43	100115	Dec. 18, 2013	Dec. 17, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 26, 2014	Feb. 25, 2015
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Jan. 05, 2014	Jan. 04, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8449B	3008A01961	Oct. 18, 2014	Oct. 17, 2015
Preamplifier Agilent	8447D	2944A10738	Oct. 18, 2014	Oct. 17, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Aug. 09, 2014	Aug. 08, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table BV ADT	TT100.	TT93021704	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021704	NA	NA
Mini-Circuits Power Splitter	ZN2PD-9G	NA	Apr. 25, 2014	Apr. 24, 2015
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 4.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 460141.
5. The IC Site Registration No. is IC7450F-4.



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3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Femtocell	
MODEL NO.	9961 Home Cell V1	
POWER SUPPLY	12Vdc (Adapter)	
MODULATION TECHNOLOGY	QPSK	
FREQUENCY RANGE	Channel Bandwidth 5MHz	2112.5MHz ~ 2152.5MHz
	Channel Bandwidth 10MHz	2115MHz ~ 2150MHz
	Channel Bandwidth 15MHz	2117.5MHz ~ 2147.5MHz
	Channel Bandwidth 20MHz	2120MHz ~ 2145MHz
MAX. EIRP POWER (W)	Channel Bandwidth 5MHz	0.570W (27.56dBm)
	Channel Bandwidth 10MHz	0.597W (27.76dBm)
	Channel Bandwidth 15MHz	0.357W (25.53dBm)
	Channel Bandwidth 20MHz	0.604W (27.81dBm)
EMISSION DESIGNATOR	Channel Bandwidth 5MHz	4M43G7D
	Channel Bandwidth 10MHz	8M90G7D
	Channel Bandwidth 15MHz	13M2G7D
	Channel Bandwidth 20MHz	17M8G7D
ANTENNA TYPE	Channel Bandwidth 5MHz: Ch 1975: Dipole antenna with 4.59dBi gain Ch 2175: Dipole antenna with 4.54dBi gain Ch 2375: Dipole antenna with 4.39dBi gain Channel Bandwidth 10MHz: Ch 2000: Dipole antenna with 4.59dBi gain Ch 2175: Dipole antenna with 4.54dBi gain Ch 2350: Dipole antenna with 4.39dBi gain Channel Bandwidth 15MHz: Ch 2025: Dipole antenna with 4.53dBi gain Ch 2175: Dipole antenna with 4.54dBi gain Ch 2325: Dipole antenna with 4.44dBi gain Channel Bandwidth 20MHz: Ch 2050: Dipole antenna with 4.53dBi gain Ch 2175: Dipole antenna with 4.54dBi gain Ch 2300: Dipole antenna with 4.39dBi gain	
ANTENNA CONNECTOR	I-PEX(MHF)	
I/O PORTS	Refer to users' manual	
DATA CABLE	4.572m GPS antenna (Cable Type: RG-174 Coaxial Cable (shielded)) 1.8m Ethernet cable (non-shielded)	
ACCESSORY DEVICES	Adapter	



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NOTE:

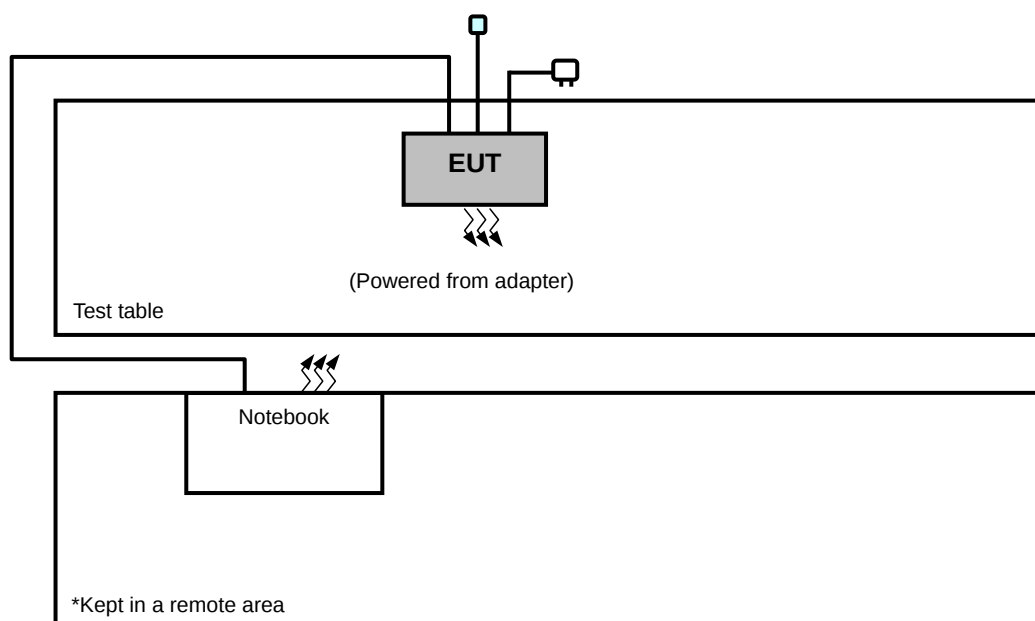
1. The EUT uses following adapters.

Adapter 1	
Brand	AOEM
Model	ADS0248-W 120200
Input Power	100-240Vac~50-60Hz, 0.6A
Output Power	12Vdc, 2.0A
Power Line	1.5m cable without core attached on adapter

Adapter 2	
Brand	Phihong
Model	PSAC24A-120
Input Power	100-240Vac~50/60Hz, 0.6A
Output Power	12Vdc, 2.0A
Power Line	1.8m cable without core attached on adapter

2. The above EUT information is declared by manufacturer and for more detailed feature description, please refer to the manufacturer's specifications or User's Manual.

3.2 CONFIGURATION OF SYSTEM UNDER TEST



3.3 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5430	FKKCYW1	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m RJ45 UTP cable

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).

3.4 DESCRIPTION OF TEST MODES

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 on Z-plane. Following channel(s) was (were) selected for the final test as listed below:

Test results are presented in the report as below.

Test Mode	Test Condition
A	Power from adapter 1
B	Power from adapter 2

TEST MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION
A	OUTPUT POWER	1975 to 2375	1975, 2175, 2375	5MHz	QPSK
		2000 to 2350	2000, 2175, 2350	10MHz	QPSK
		2025 to 2275	2025, 2175, 2325	15MHz	QPSK
		2050 to 2300	2050, 2175, 2300	20MHz	QPSK
A	FREQUENCY STABILITY	1975 to 2375	2175	5MHz	QPSK
		2000 to 2350	2175	10MHz	QPSK
		2025 to 2275	2175	15MHz	QPSK
		2050 to 2300	2175	20MHz	QPSK
A	EMISSION BANDWIDTH	1975 to 2375	1975, 2175, 2375	5MHz	QPSK
		2000 to 2350	2000, 2175, 2350	10MHz	QPSK
		2025 to 2275	2025, 2175, 2325	15MHz	QPSK
		2050 to 2300	2050, 2175, 2300	20MHz	QPSK
A	CHANNEL EDGE	1975 to 2375	1975, 2375	5MHz	QPSK
		2000 to 2350	2000, 2350	10MHz	QPSK
		2025 to 2275	2025, 2325	15MHz	QPSK
		2050 to 2300	2050, 2300	20MHz	QPSK
A	CONDCUDED EMISSION	1975 to 2375	1975, 2175, 2375	5MHz	QPSK
		2000 to 2350	2000, 2175, 2350	10MHz	QPSK
		2025 to 2275	2025, 2175, 2325	15MHz	QPSK
		2050 to 2300	2050, 2175, 2300	20MHz	QPSK
A, B	RADIATED EMISSION Below 1GHz	1975 to 2375	1975	5MHz	QPSK
		2000 to 2350	2000	10MHz	QPSK
		2025 to 2275	2025	15MHz	QPSK
		2050 to 2300	2050	20MHz	QPSK
A	RADIATED EMISSION Above 1GHz	1975 to 2375	1975, 2175, 2375	5MHz	QPSK
		2000 to 2350	2000, 2175, 2350	10MHz	QPSK
		2025 to 2275	2025, 2175, 2325	15MHz	QPSK
		2050 to 2300	2050, 2175, 2300	20MHz	QPSK

NOTE: For radiated emission below 1 GHz, the low, mid and high channels were pre-tested in chamber. The low channel was the worst case and chosen for final test.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
OUTPUT POWER	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
FREQUENCY STABILITY	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
EMISSION BANDWIDTH	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
CHANNEL EDGE	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
CONDCUDED EMISSION	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin

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 27

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 27.50(d)(4) that fixed, mobile, and portable (hand-held) stations are limited to 1 watt EIRP.

4.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

- a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range.)
- b. The conducted peak output power used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. The path loss included the splitter loss, cable loss and 20dB pad loss. The spectrum set RB/VB 3MHz, then read peak power value and record to the test. (All transmitted path loss shall be considered in the test report data.)
- c. Substitution method is used for E.I.R.P measurement. 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.
- d. 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
- e. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

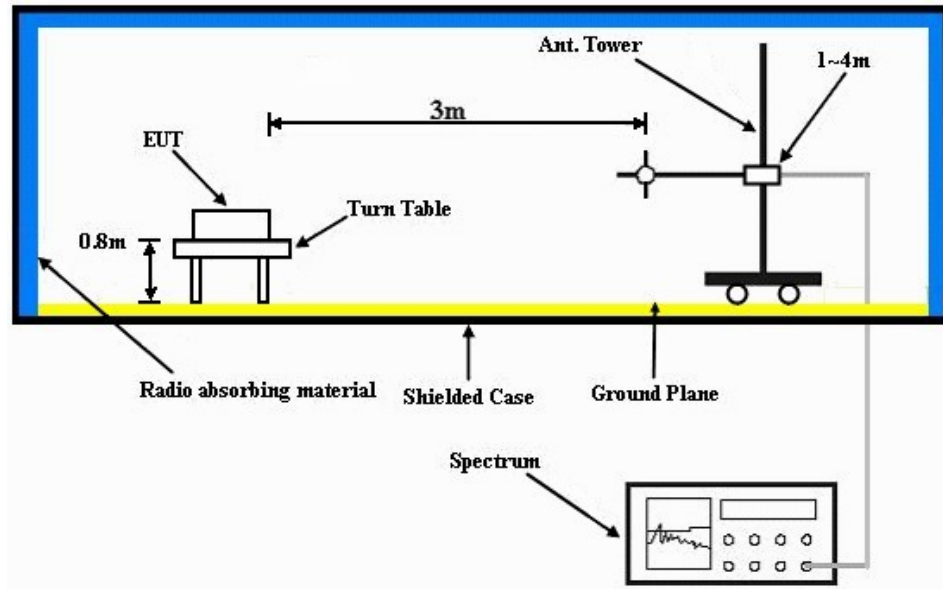
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 10MHz/10MHz.

CONDUCTED POWER MEASUREMENT:

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

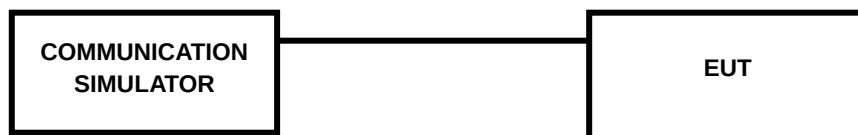
4.1.3 TEST SETUP

EIRP / ERP MEASUREMENT:



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

CONDUCTED POWER MEASUREMENT:



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

4.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	LTE (BW: 5MHz)		
Channel	1975	2175	2375
Frequency	2112.5	2132.5	2152.5
QPSK	23.47	23.44	23.67

Band	LTE (BW: 10MHz)		
Channel	2000	2175	2350
Frequency	2115.0	2132.5	2150.0
QPSK	23.67	23.50	23.54

Band	LTE (BW: 15MHz)		
Channel	2025	2175	2325
Frequency	2117.5	2132.5	2147.5
QPSK	21.50	21.47	20.91

Band	LTE (BW: 20MHz)		
Channel	2050	2175	2300
Frequency	2120.0	2132.5	2145.0
QPSK	23.13	23.77	23.43

EIRP (dBm)

CHANNEL BANDWIDTH: 5MHz QPSK

MODE		TX channel 1975					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.5	-11.76	26.82	0.74	27.56	30.00	-2.44
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.5	-18.14	20.72	0.74	21.46	30.00	-8.54

MODE		TX channel 2175					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-11.83	26.75	0.73	27.48	30.00	-2.52
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-19.26	19.73	0.73	20.46	30.00	-9.54

MODE		TX channel 2375					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2152.5	-11.75	26.83	0.73	27.56	30.00	-2.44
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2152.5	-18.93	20.17	0.73	20.90	30.00	-9.10

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

CHANNEL BANDWIDTH: 10MHz QPSK

MODE		TX channel 2000					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.0	-11.56	27.02	0.74	27.76	30.00	-2.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2115.0	-18.05	20.82	0.74	21.56	30.00	-8.44

MODE		TX channel 2175					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-11.83	26.75	0.73	27.48	30.00	-2.52
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-19.05	19.94	0.73	20.67	30.00	-9.33

MODE		TX channel 2350					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2150.0	-11.88	26.70	0.73	27.43	30.00	-2.57
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2150.0	-19.76	19.33	0.73	20.06	30.00	-9.94

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

CHANNEL BANDWIDTH: 15MHz QPSK

MODE		TX channel 2025					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.5	-13.79	24.79	0.74	25.53	30.00	-4.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2117.5	-19.56	19.33	0.74	20.07	30.00	-9.93

MODE		TX channel 2175					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-13.80	24.78	0.73	25.51	30.00	-4.49
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-20.56	18.43	0.73	19.16	30.00	-10.84

MODE		TX channel 2325					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2147.5	-14.46	24.12	0.73	24.85	30.00	-5.15
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2147.5	-20.77	18.30	0.73	19.03	30.00	-10.97

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

CHANNEL BANDWIDTH: 20MHz QPSK

MODE		TX channel 2050					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.0	-12.16	26.42	0.74	27.16	30.00	-2.84
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2120.0	-19.57	19.33	0.74	20.07	30.00	-9.93

MODE		TX channel 2175					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-11.50	27.08	0.73	27.81	30.00	-2.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2132.5	-19.87	19.12	0.73	19.85	30.00	-10.15

MODE		TX channel 2300					
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2145.0	-11.99	26.59	0.73	27.32	30.00	-2.68
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2145.0	-20.27	18.79	0.73	19.52	30.00	-10.48

NOTE: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

4.2 FREQUENCY STABILITY MEASUREMENT

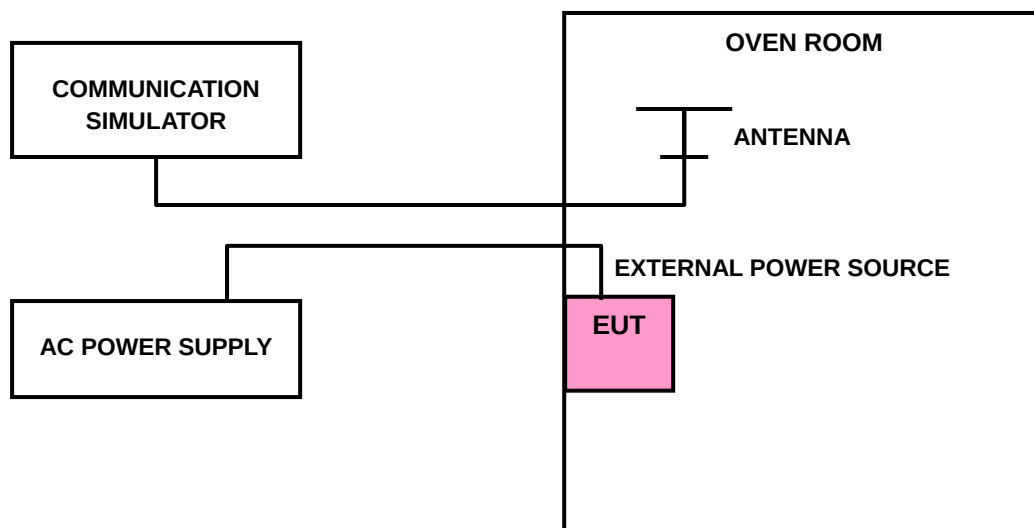
4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT $-20^{\circ}\text{C} \sim 50^{\circ}\text{C}$.

4.2.2 TEST PROCEDURE

- Power must be removed when changing from one temperature to another or one voltage to another voltage. 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 AC input power. The various Volts from the minimum 108Volts to 132Volts. 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 $\pm 0.5^{\circ}\text{C}$ 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.

4.2.3 TEST SETUP



4.2.4 TEST RESULTS

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)				LIMIT (ppm)
	5MHz	10MHz	15MHz	20MHz	
132	-0.007	-0.007	-0.007	-0.008	2.5
120	-0.008	-0.008	-0.007	-0.008	2.5
108	-0.007	-0.007	-0.006	-0.008	2.5

NOTE: The applicant defined the normal working voltage of the adapter is from 108Vac to 132Vac.

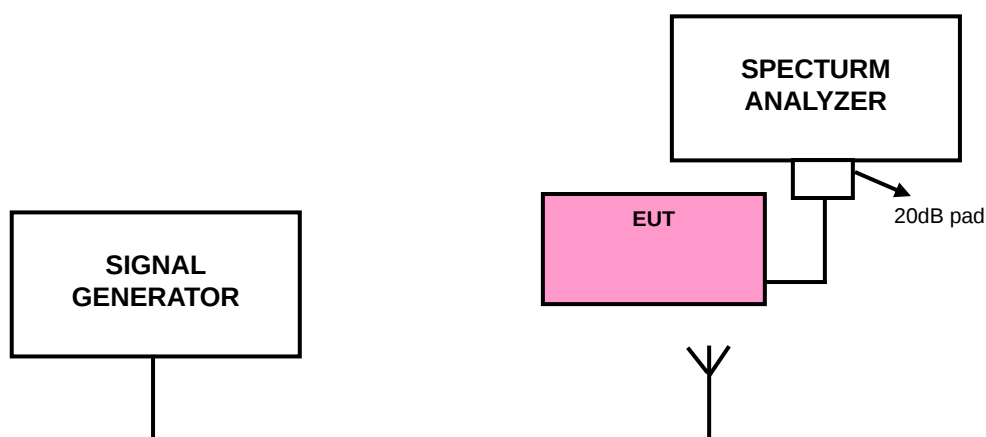
TEMP. (°C)	FREQUENCY ERROR (ppm)				LIMIT (ppm)
	5MHz	10MHz	15MHz	20MHz	
50	-0.011	-0.010	-0.011	-0.009	2.5
40	-0.009	-0.009	-0.008	-0.011	2.5
30	-0.007	-0.008	-0.009	-0.008	2.5
20	-0.008	-0.008	-0.007	-0.008	2.5
10	-0.010	-0.009	-0.009	-0.010	2.5
0	-0.011	-0.010	-0.009	-0.013	2.5
-10	-0.014	-0.013	-0.011	-0.012	2.5
-20	-0.012	-0.014	-0.015	-0.015	2.5

4.3 EMISSION BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF EMISSION BANDWIDTH MEASUREMENT

According to FCC 27.53(h) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

4.3.2 TEST SETUP

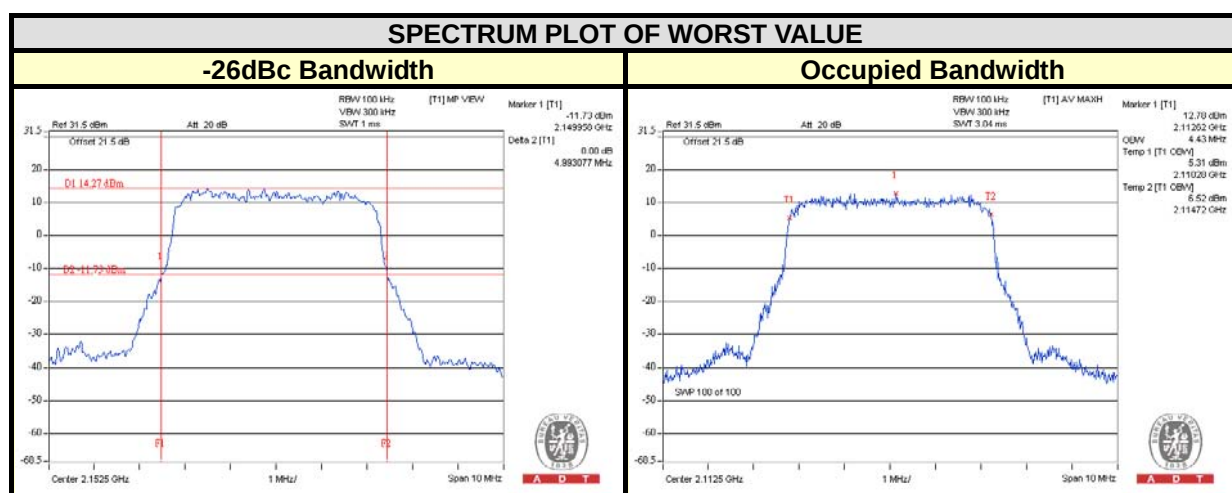


4.3.3 TEST PROCEDURES

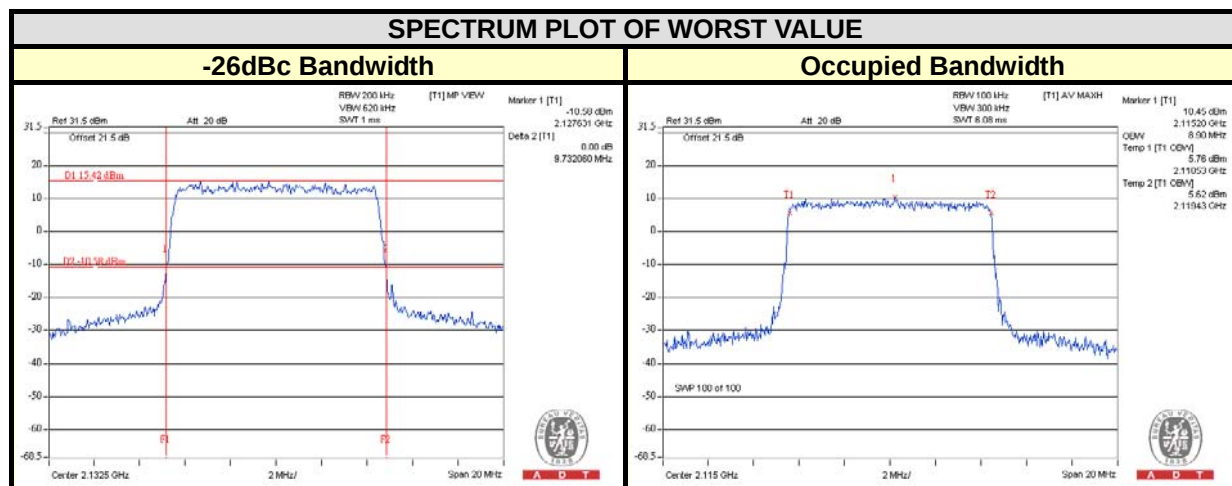
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 5MHz) RBW = 200kHz and VBW = 620kHz (Channel Bandwidth: 10MHz and 15MHz), RBW = 430kHz and VBW = 1.2MHz (Channel Bandwidth: 20MHz). The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

4.3.4 TEST RESULTS

CHANNEL BANDWIDTH: 5MHz / QPSK					
CHANNEL	FREQUENCY (MHz)	-26dBc BANDWIDTH (MHz)		OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1
1975	2112.5	4.94	4.92	4.43	4.42
2175	2132.5	4.88	4.93	4.42	4.43
2375	2152.5	4.99	4.92	4.43	4.42



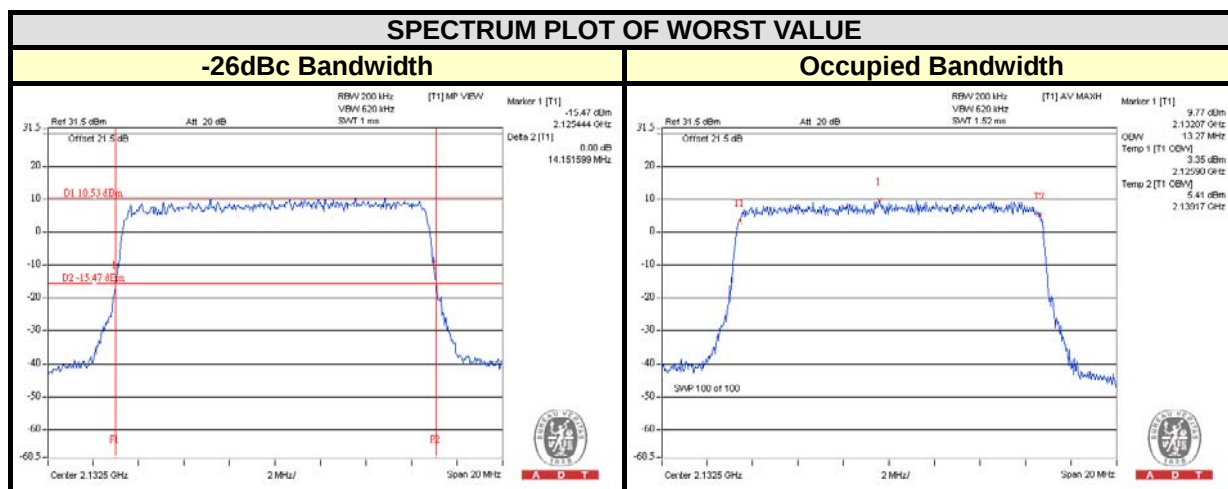
CHANNEL BANDWIDTH: 10MHz / QPSK					
CHANNEL	FREQUENCY (MHz)	-26dBc BANDWIDTH (MHz)		OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1
2000	2115	9.63	9.61	8.90	8.90
2175	2132.5	9.73	9.67	8.90	8.90
2350	2150	9.61	9.62	8.90	8.90



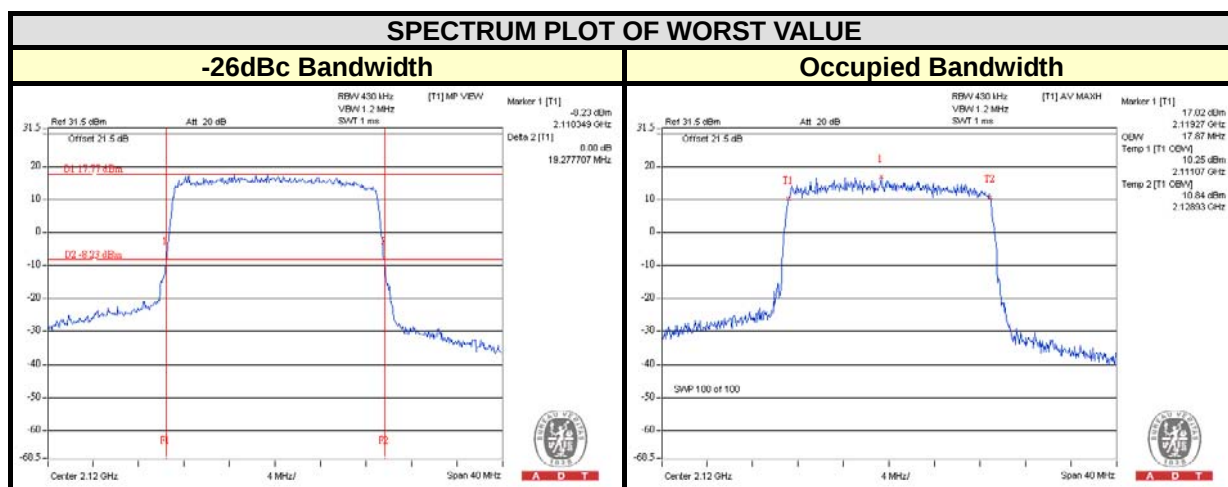


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CHANNEL BANDWIDTH: 15MHz / QPSK					
CHANNEL	FREQUENCY (MHz)	-26dBc BANDWIDTH (MHz)		OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1
2025	2117.5	14.07	14.05	13.20	13.20
2175	2132.5	14.15	14.02	13.27	13.27
2325	2147.5	14.01	14.05	13.20	13.23



CHANNEL BANDWIDTH: 20MHz / QPSK					
CHANNEL	FREQUENCY (MHz)	-26dBc BANDWIDTH (MHz)		OCCUPIED BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1
2050	2120	19.28	19.17	17.87	17.80
2175	2132.5	19.19	18.95	17.87	17.80
2300	2145	19.12	19.10	17.80	17.80

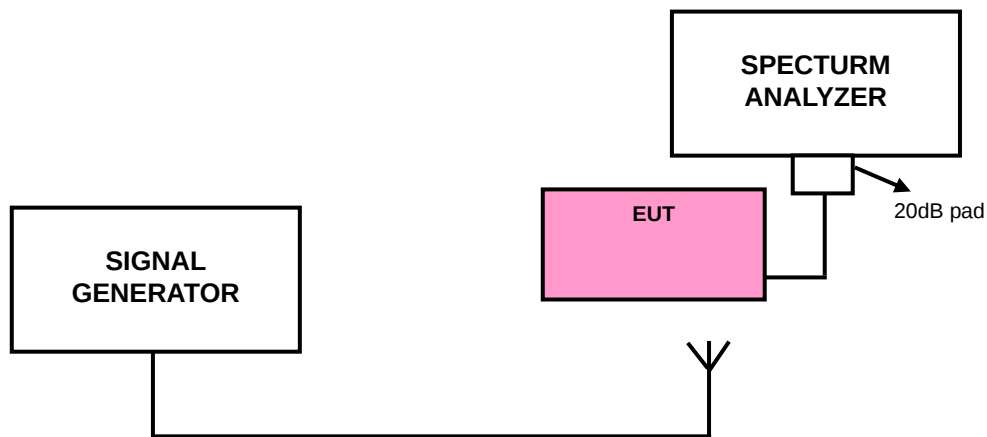


4.4 CHANNEL EDGE MEASUREMENT

4.4.1 LIMITS OF CHANNEL EDGE MEASUREMENT

According to FCC 27.53(h) specified the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ 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.

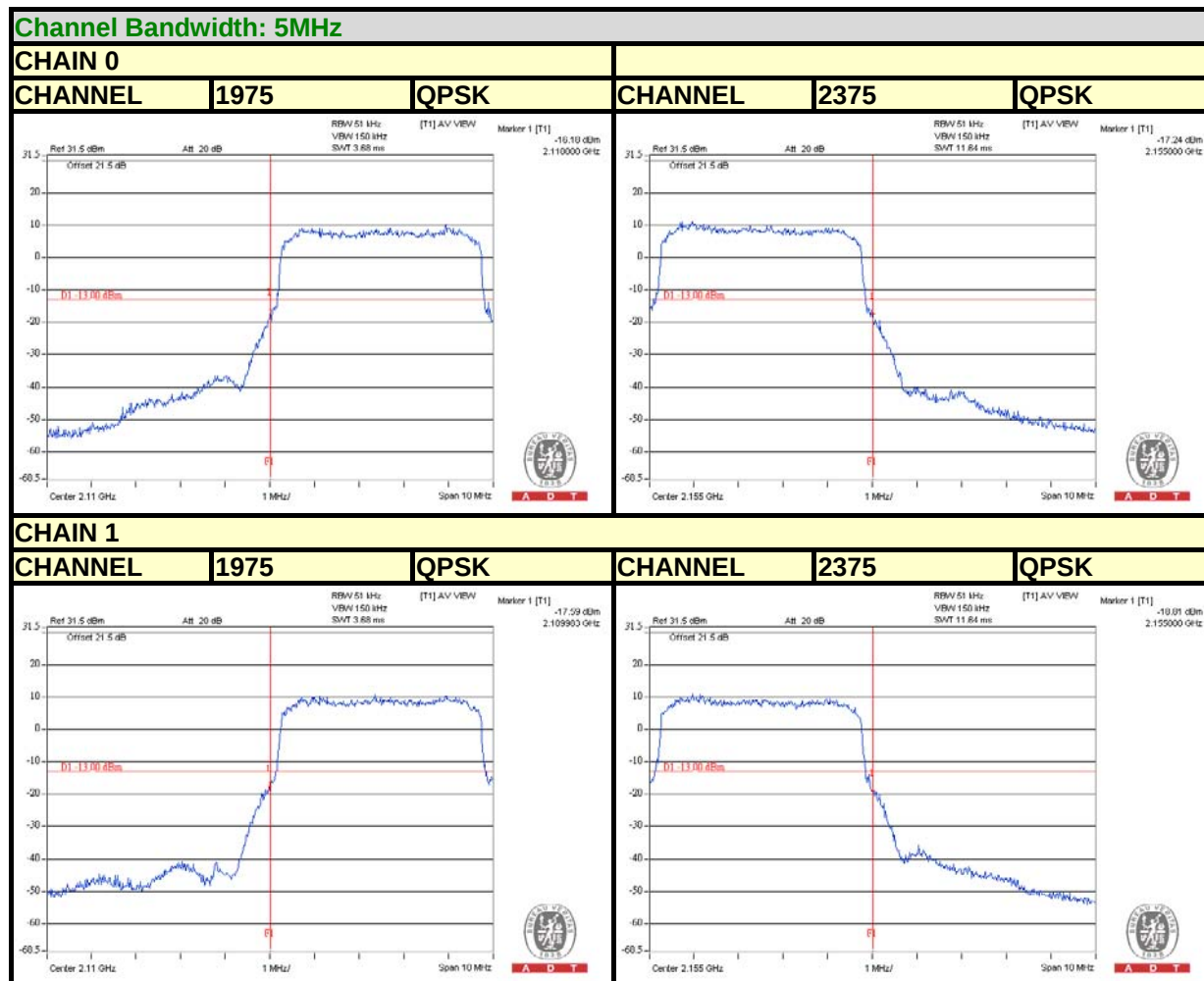
4.4.2 TEST SETUP



4.4.3 TEST PROCEDURES

- The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 51kHz (Channel Bandwidth: 5MHz) / 100kHz (Channel Bandwidth: 10MHz) / 150kHz (Channel Bandwidth: 15MHz) / 200kHz (Channel Bandwidth: 20MHz).
- Record the max trace plot into the test report.

4.4.4 TEST RESULTS

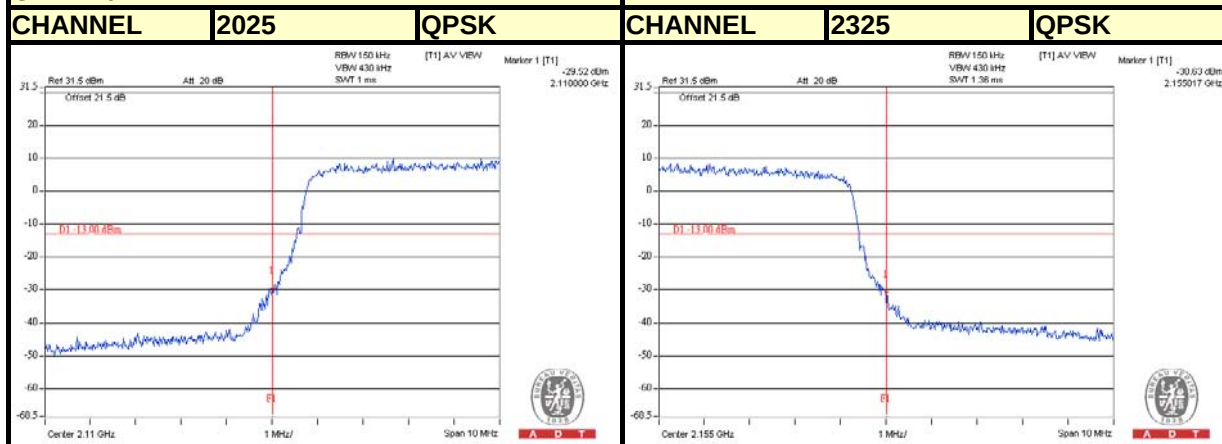




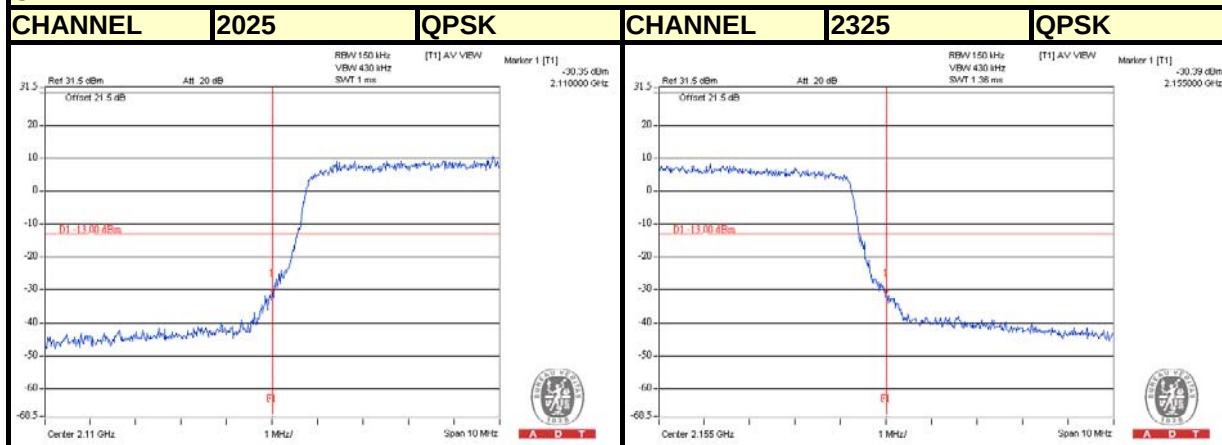
A D T

Channel Bandwidth: 15MHz

CHAIN 0



CHAIN 1

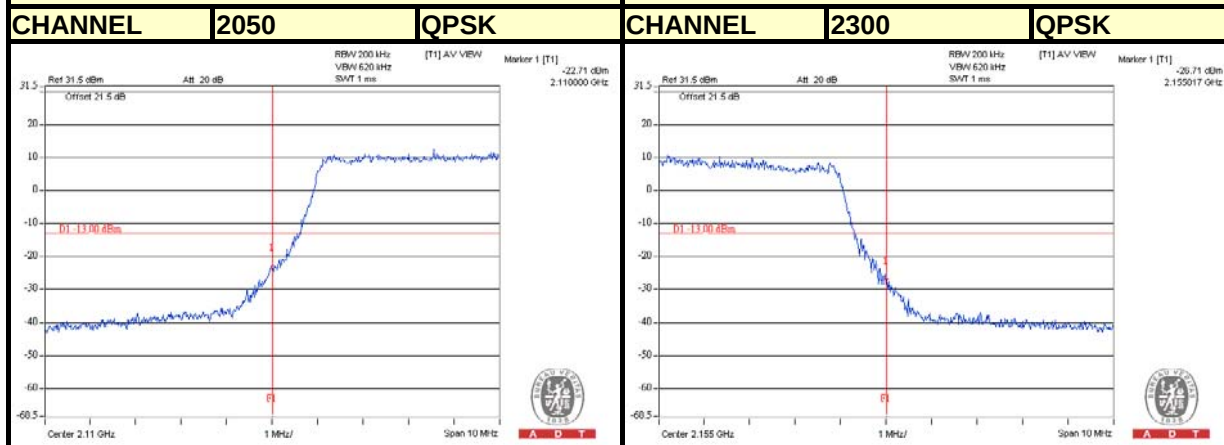




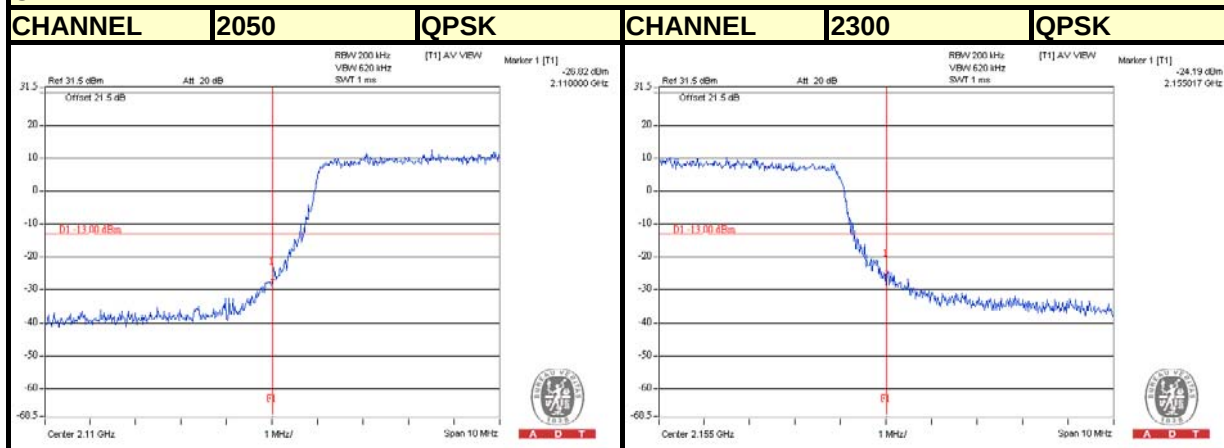
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Channel Bandwidth: 20MHz

CHAIN 0



CHAIN 1



4.5 CONDUCTED SPURIOUS EMISSIONS

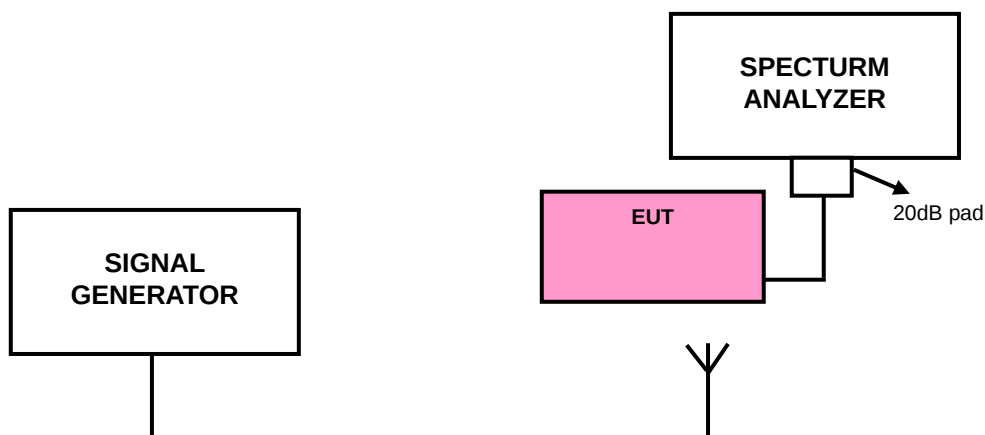
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

In the FCC 27.53(h), On any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, the emission limit equal to -13dBm .

4.5.2 TEST PROCEDURE

- All measurements were done at 3 channels: low, middle and high operational frequency range.
- When the spectrum scanned from 9kHz to 20GHz, it shall be connected to the 20dB pad attenuated the carried frequency. The spectrum set RB = 1MHz, VB = 3MHz.

4.5.3 TEST SETUP

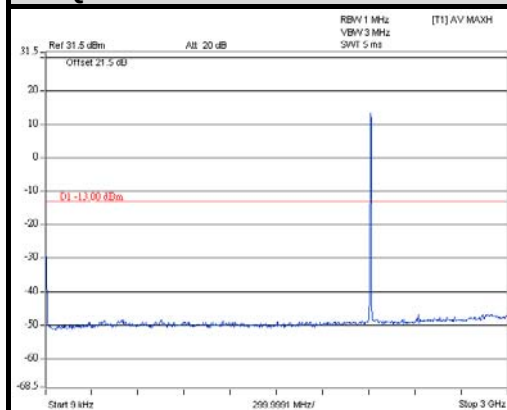


4.5.4 TEST RESULTS

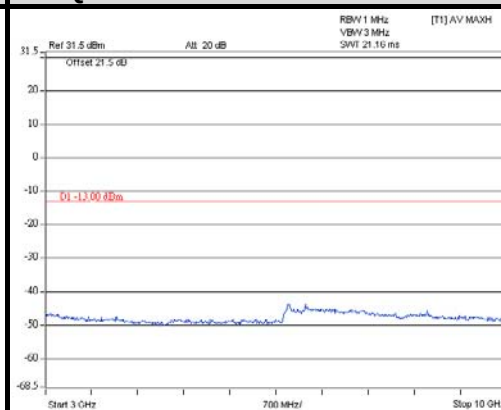
Channel Bandwidth: 5MHz / CHAIN 0

CHANNEL 1975

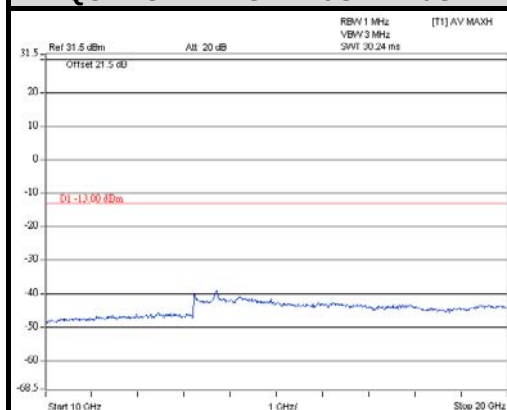
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



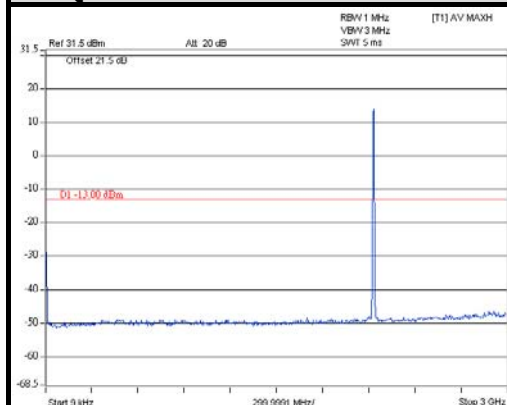
FREQUENCY RANGE : 10GHz~20GHz



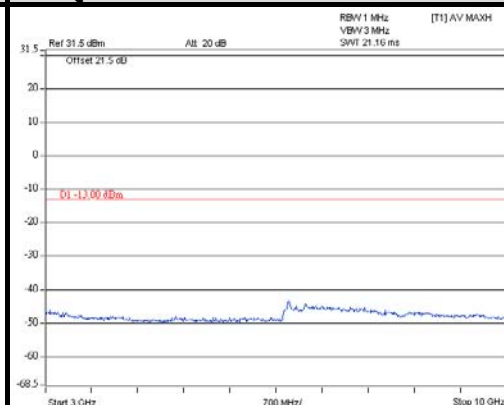
Channel Bandwidth: 5MHz / CHAIN 0

CHANNEL 2175

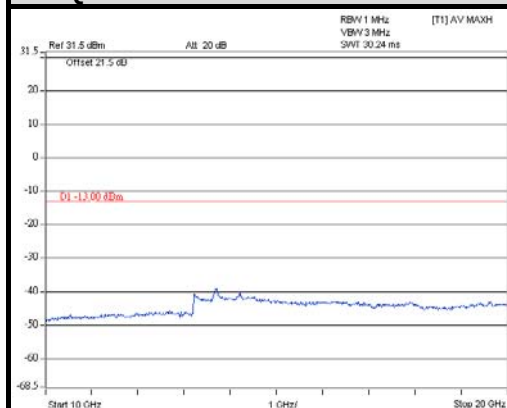
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



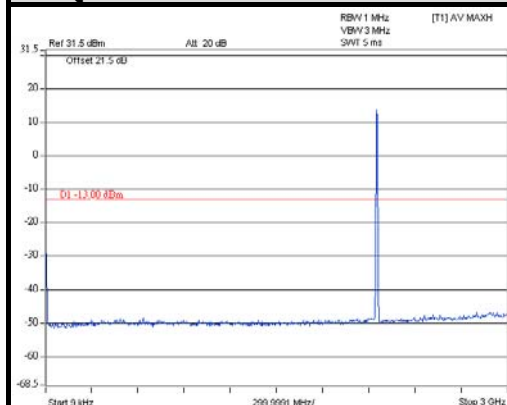
FREQUENCY RANGE : 10GHz~20GHz



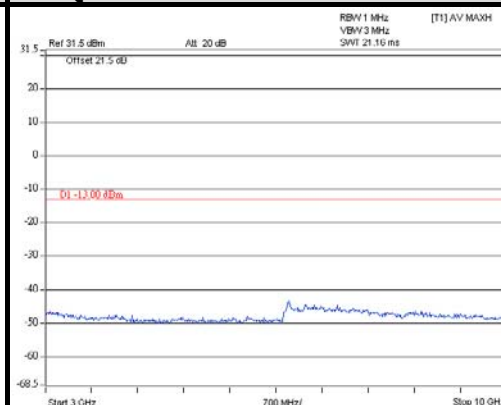
Channel Bandwidth: 5MHz / CHAIN 0

CHANNEL 2375

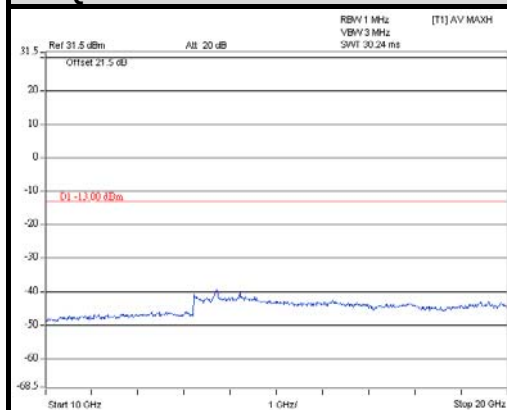
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz



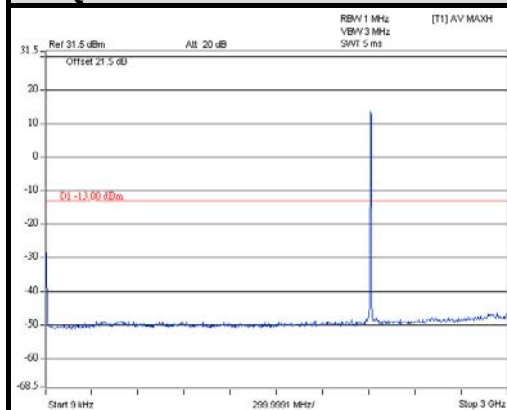


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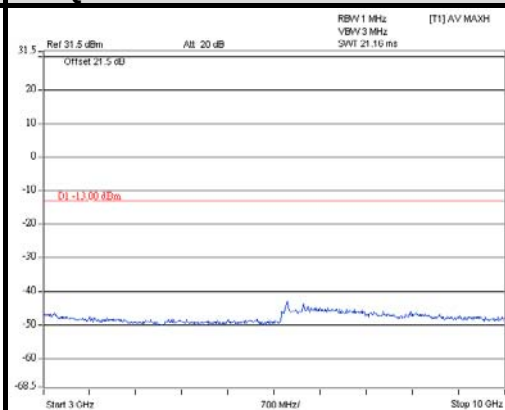
Channel Bandwidth: 5MHz / CHAIN 1

CHANNEL 1975

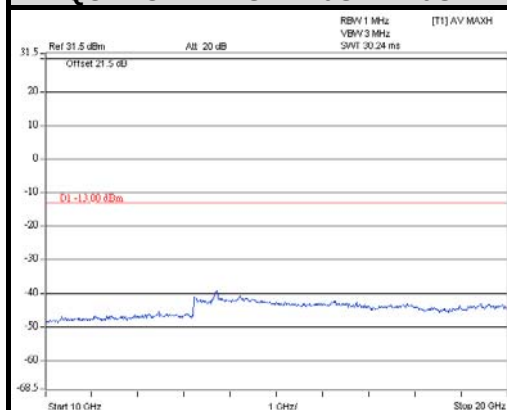
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz

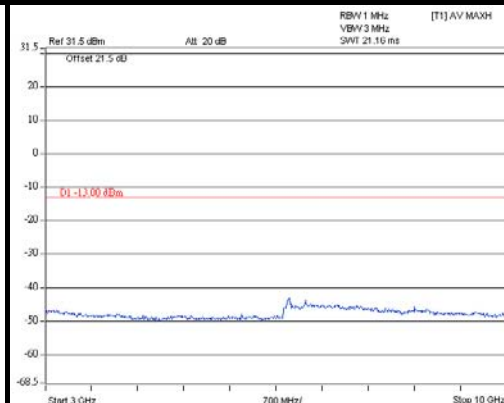
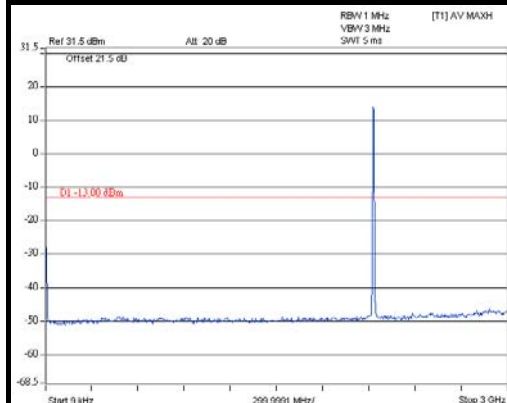


Channel Bandwidth: 5MHz / CHAIN 1

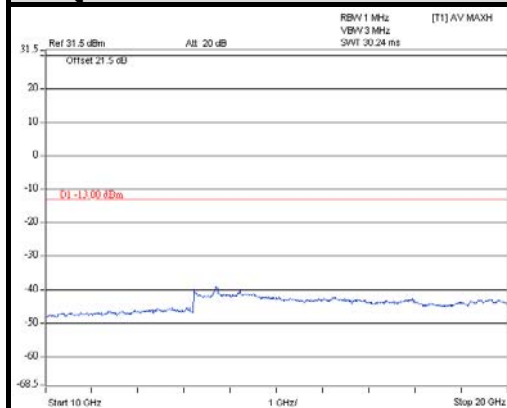
CHANNEL 2175

FREQUENCY RANGE : 9kHz~3GHz

FREQUENCY RANGE : 3GHz~10GHz



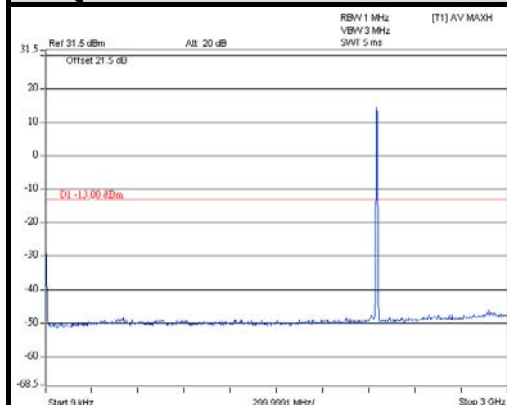
FREQUENCY RANGE : 10GHz~20GHz



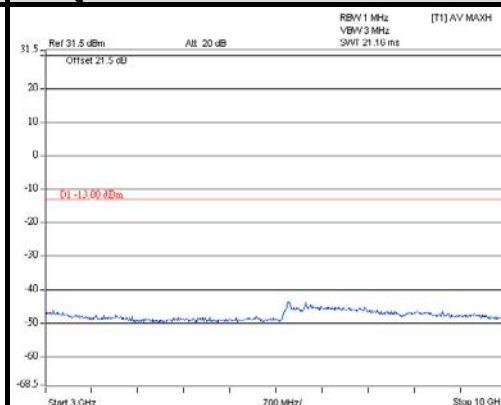
Channel Bandwidth: 5MHz / CHAIN 1

CHANNEL 2375

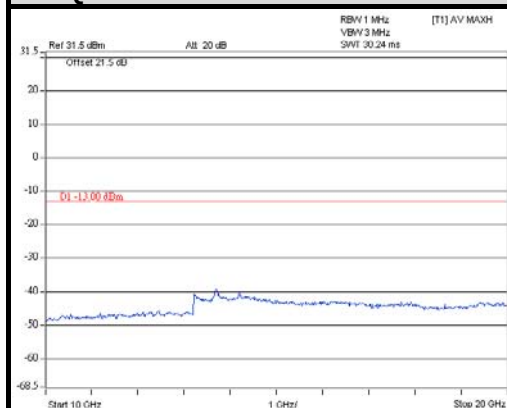
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



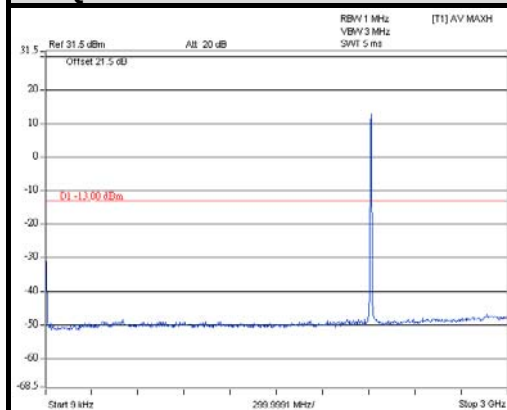
FREQUENCY RANGE : 10GHz~20GHz



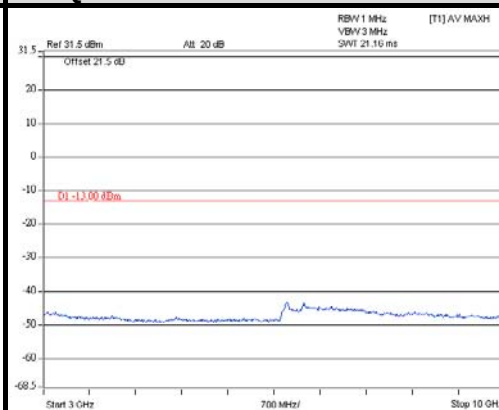
Channel Bandwidth: 10MHz / CHAIN 0

CHANNEL 2000

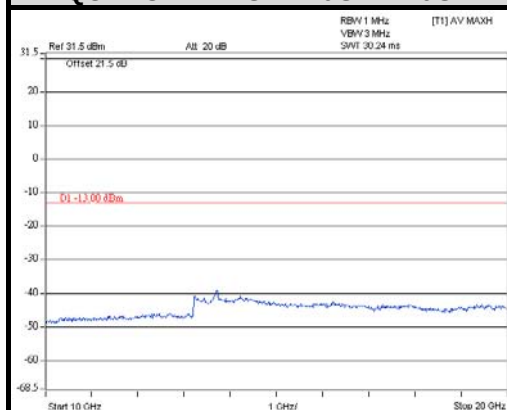
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



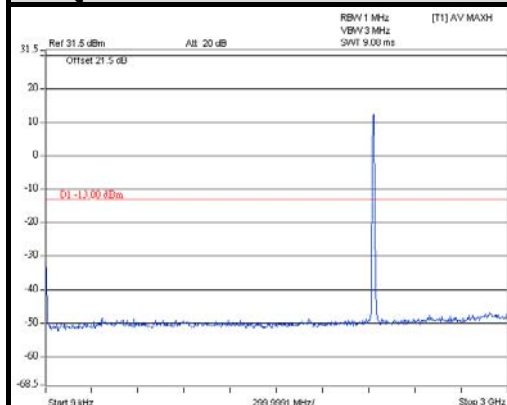
FREQUENCY RANGE : 10GHz~20GHz



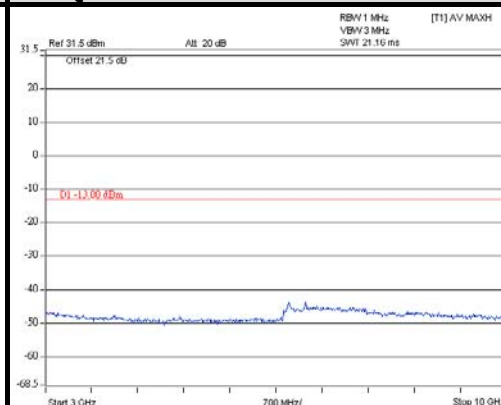
Channel Bandwidth: 10MHz / CHAIN 0

CHANNEL 2175

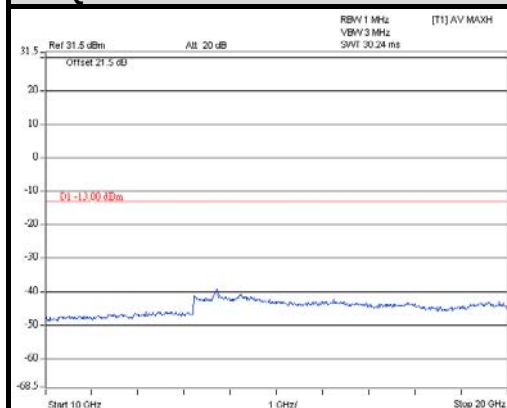
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz

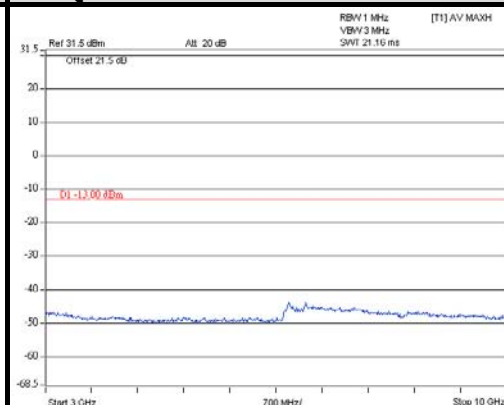
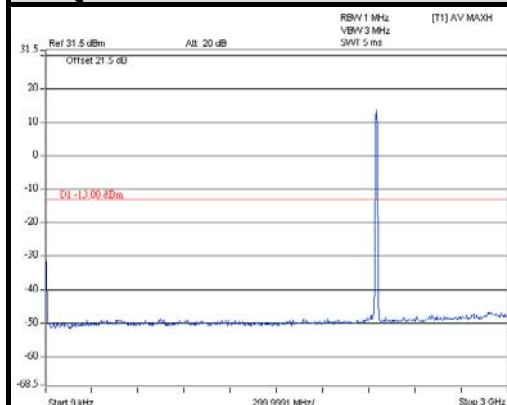


Channel Bandwidth: 10MHz / CHAIN 0

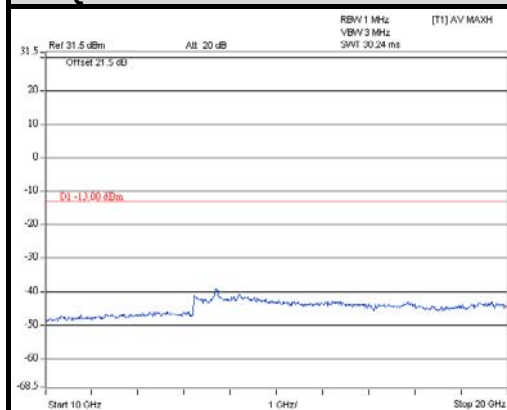
CHANNEL 2350

FREQUENCY RANGE : 9kHz~3GHz

FREQUENCY RANGE : 3GHz~10GHz



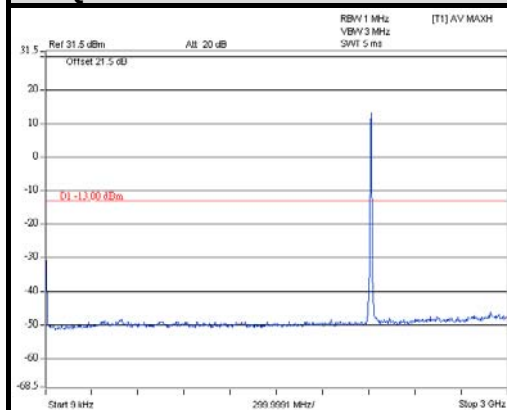
FREQUENCY RANGE : 10GHz~20GHz



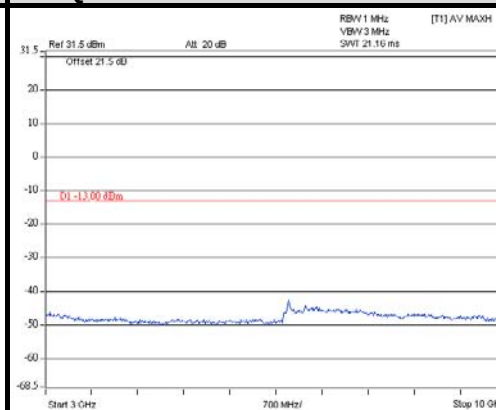
Channel Bandwidth: 10MHz / CHAIN 1

CHANNEL 2000

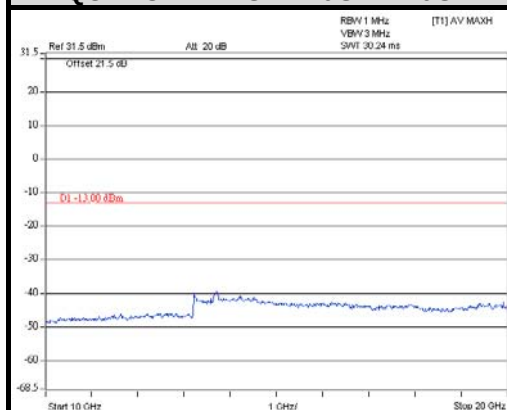
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



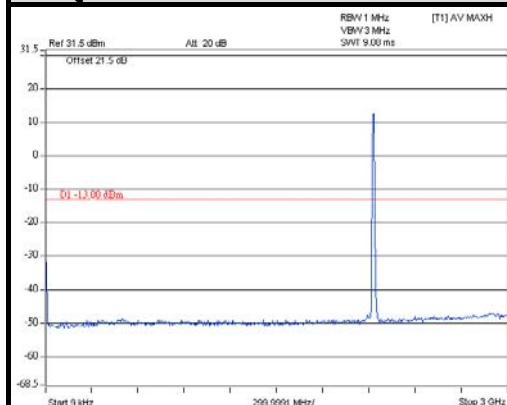
FREQUENCY RANGE : 10GHz~20GHz



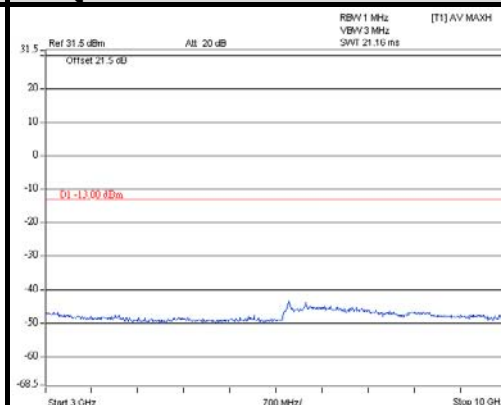
Channel Bandwidth: 10MHz / CHAIN 1

CHANNEL 2175

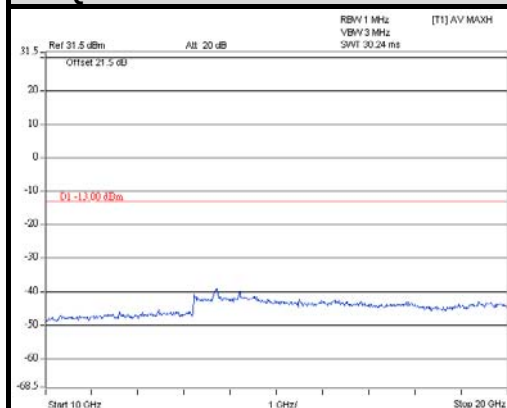
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz

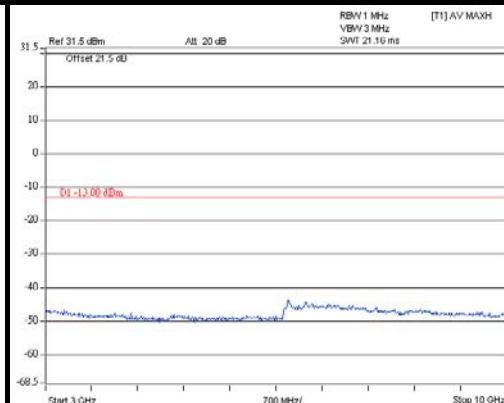
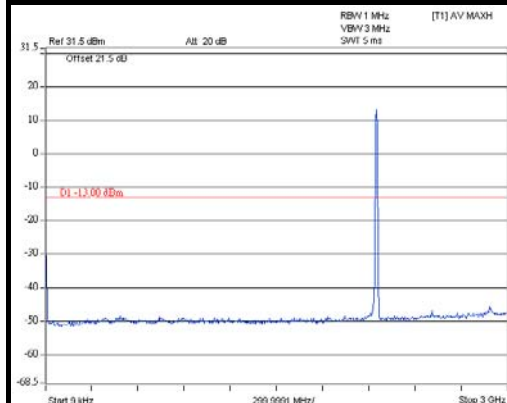


Channel Bandwidth: 10MHz / CHAIN 1

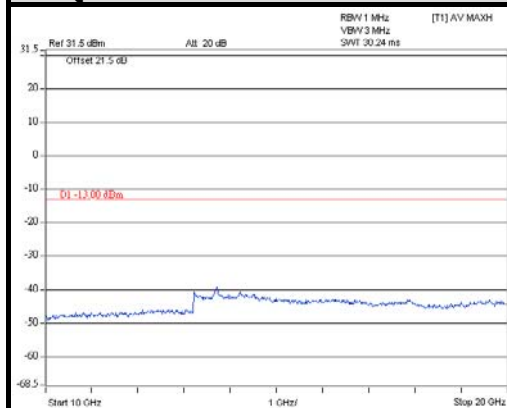
CHANNEL 2350

FREQUENCY RANGE : 9kHz~3GHz

FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz



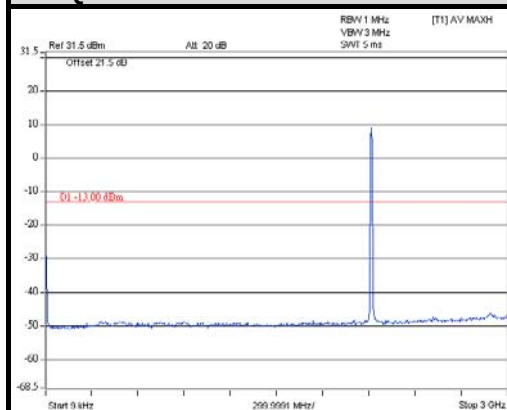


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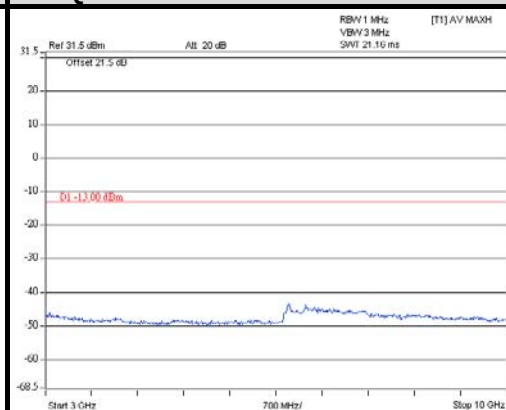
Channel Bandwidth: 15MHz / CHAIN 0

CHANNEL 2025

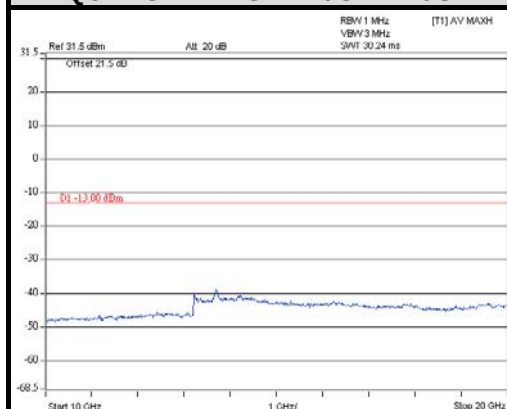
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



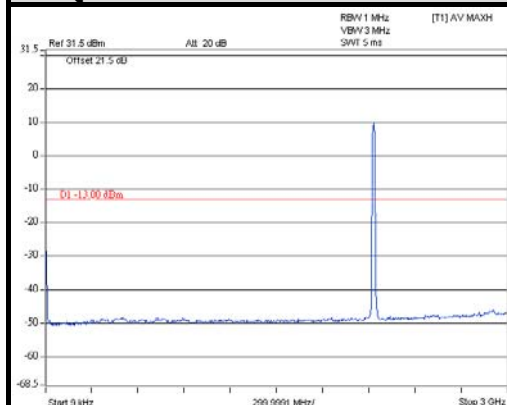
FREQUENCY RANGE : 10GHz~20GHz



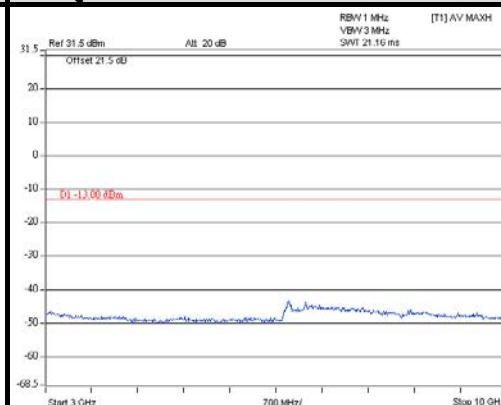
Channel Bandwidth: 15MHz / CHAIN 0

CHANNEL 2175

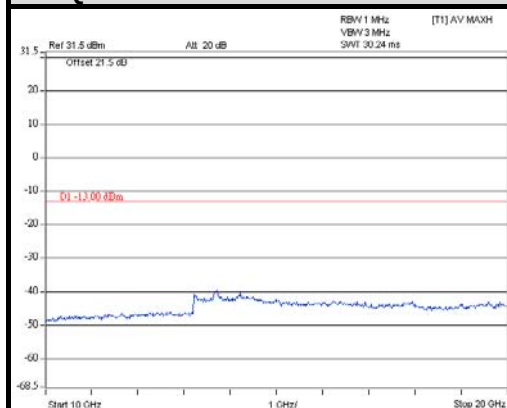
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz

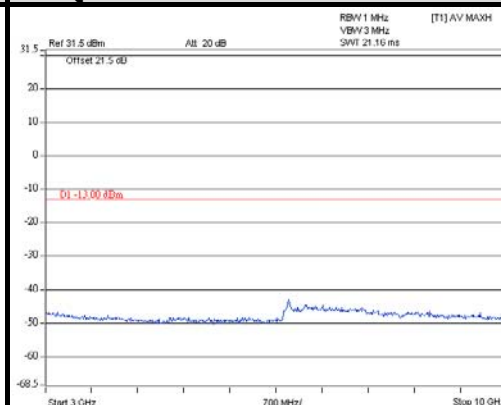
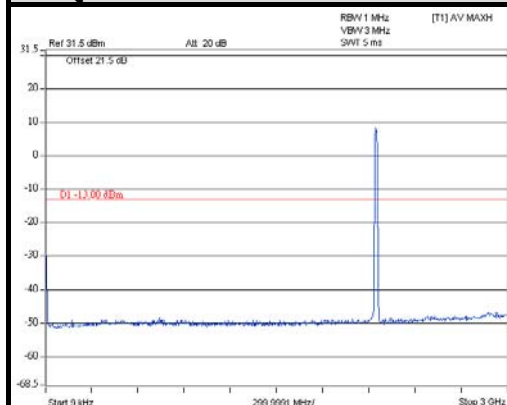


Channel Bandwidth: 15MHz / CHAIN 0

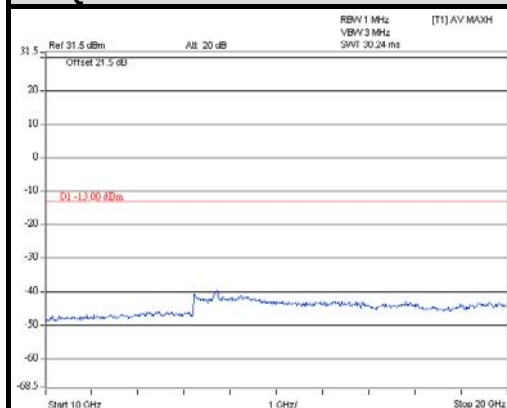
CHANNEL 2325

FREQUENCY RANGE : 9kHz~3GHz

FREQUENCY RANGE : 3GHz~10GHz



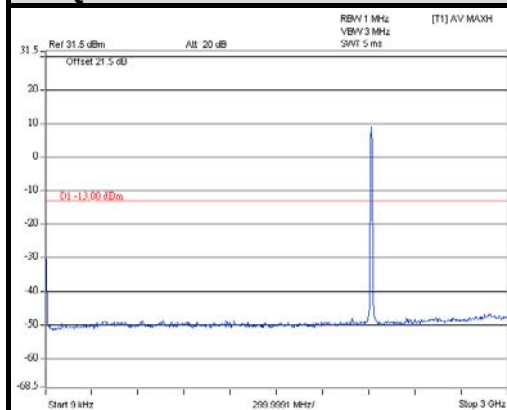
FREQUENCY RANGE : 10GHz~20GHz



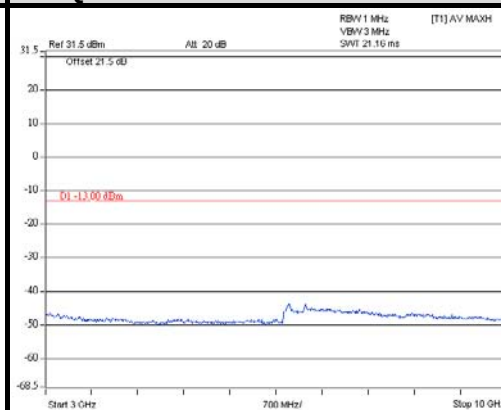
Channel Bandwidth: 15MHz / CHAIN 1

CHANNEL 2025

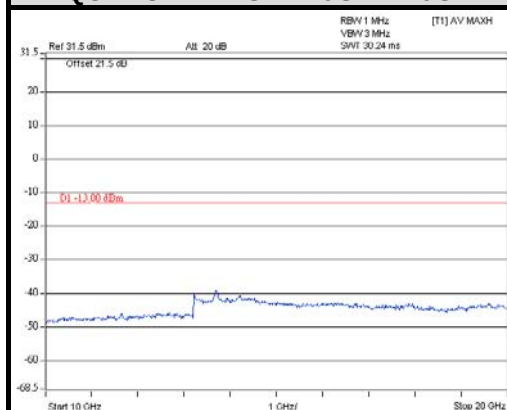
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



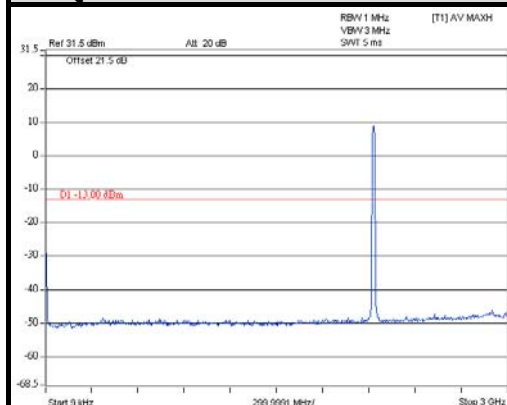
FREQUENCY RANGE : 10GHz~20GHz



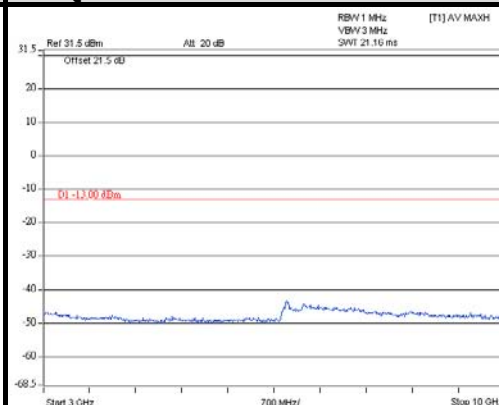
Channel Bandwidth: 15MHz / CHAIN 1

CHANNEL 2175

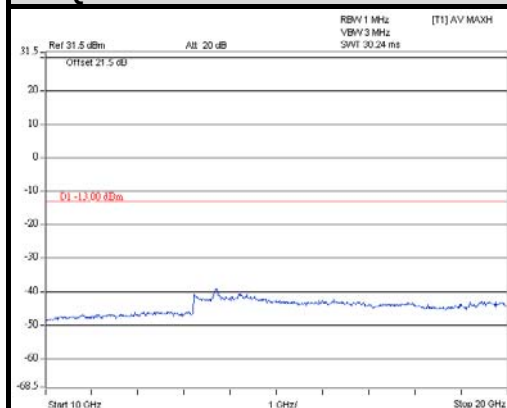
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz

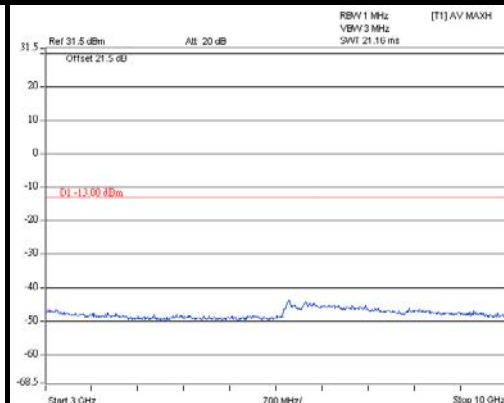
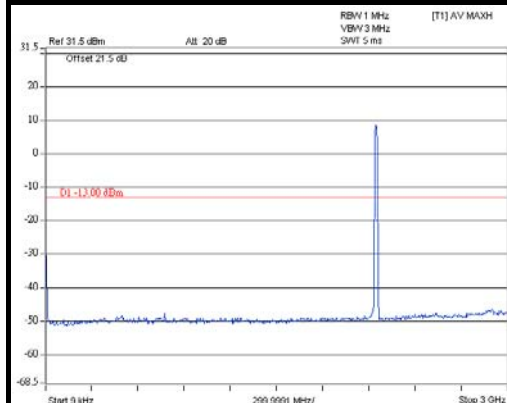


Channel Bandwidth: 15MHz / CHAIN 1

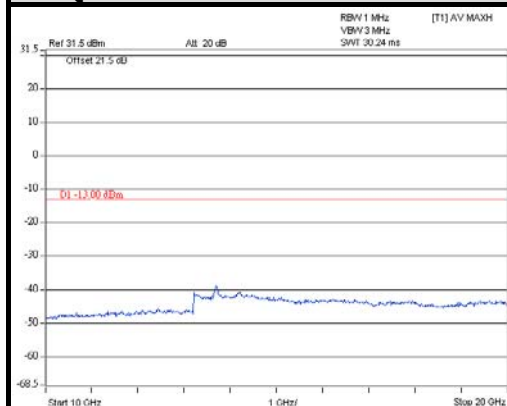
CHANNEL 2325

FREQUENCY RANGE : 9kHz~3GHz

FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz



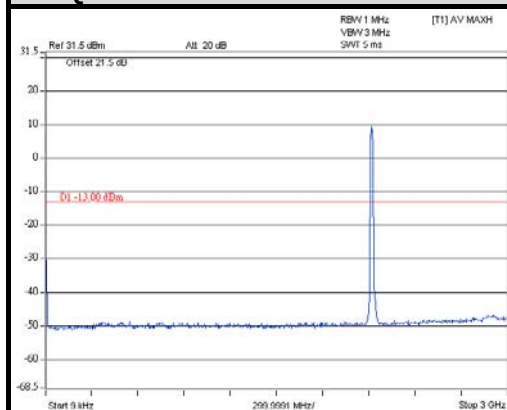


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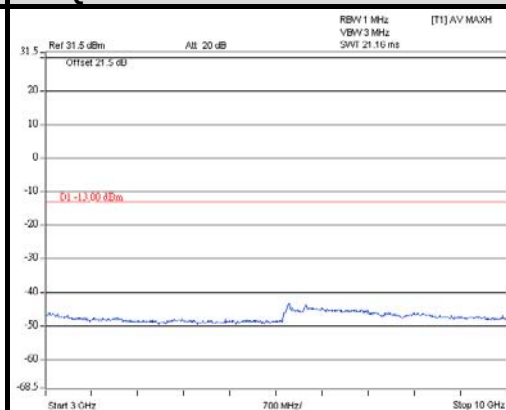
Channel Bandwidth: 20MHz / CHAIN 0

CHANNEL 2050

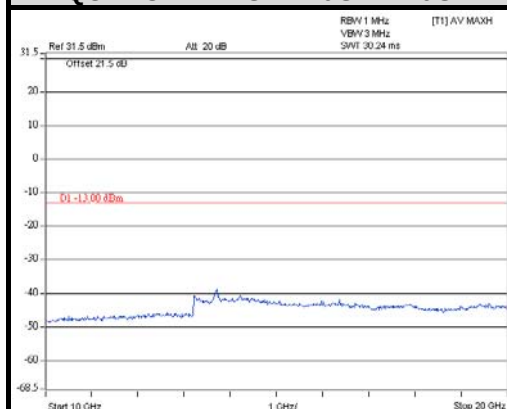
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz



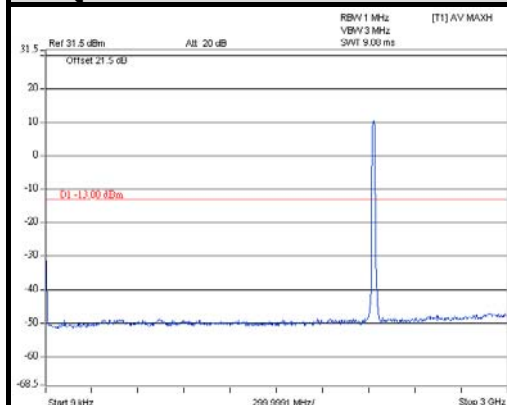


A D T

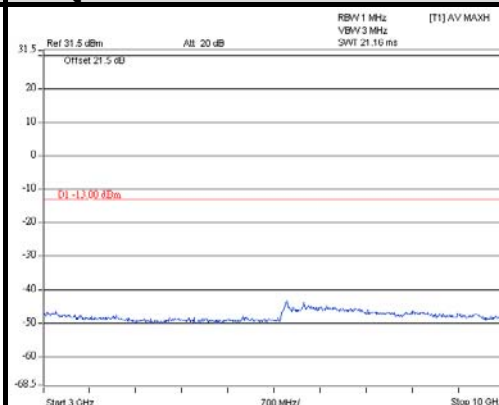
Channel Bandwidth: 20MHz / CHAIN 0

CHANNEL 2175

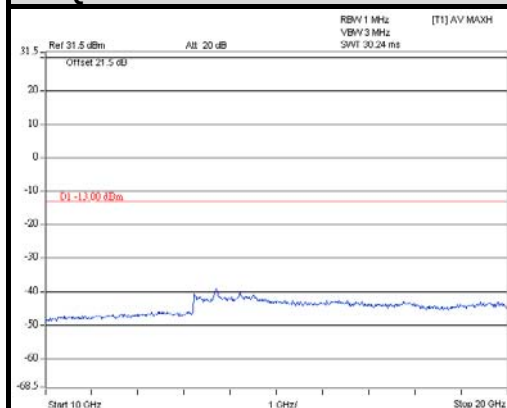
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



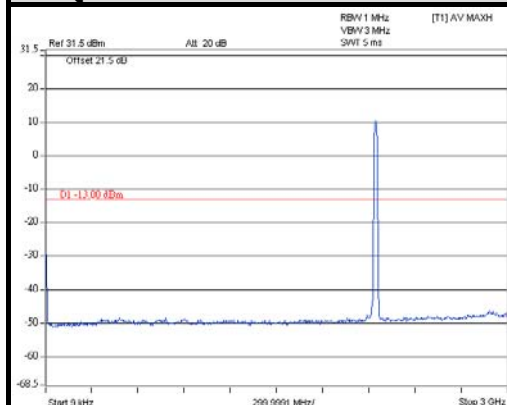
FREQUENCY RANGE : 10GHz~20GHz



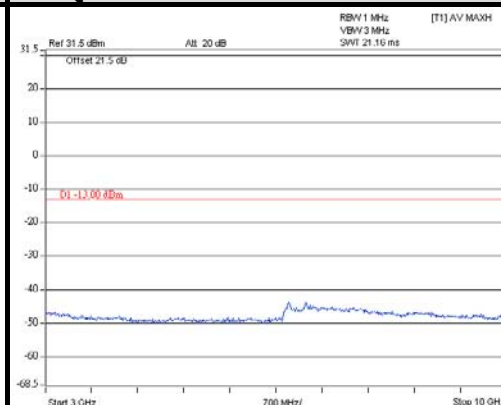
Channel Bandwidth: 20MHz / CHAIN 0

CHANNEL 2300

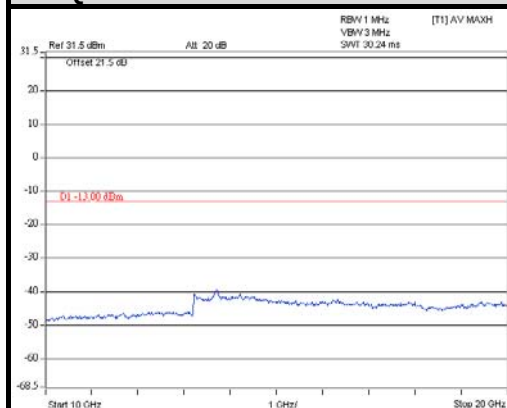
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



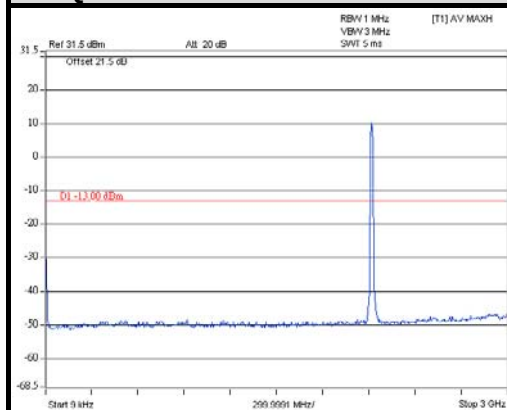
FREQUENCY RANGE : 10GHz~20GHz



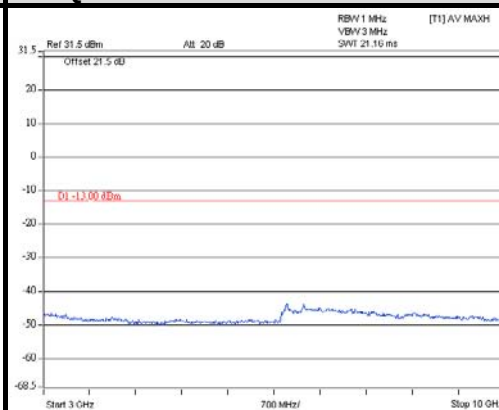
Channel Bandwidth: 20MHz / CHAIN 1

CHANNEL 2050

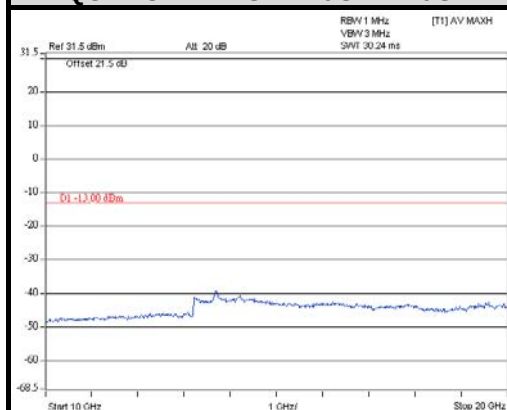
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



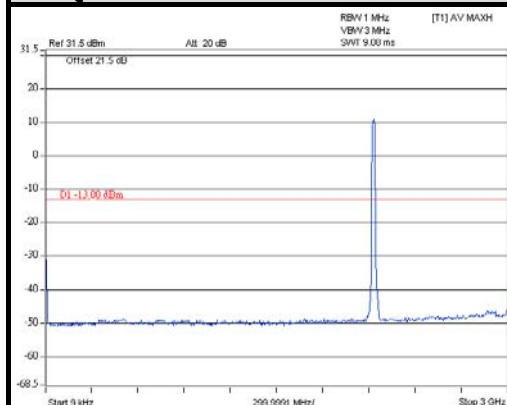
FREQUENCY RANGE : 10GHz~20GHz



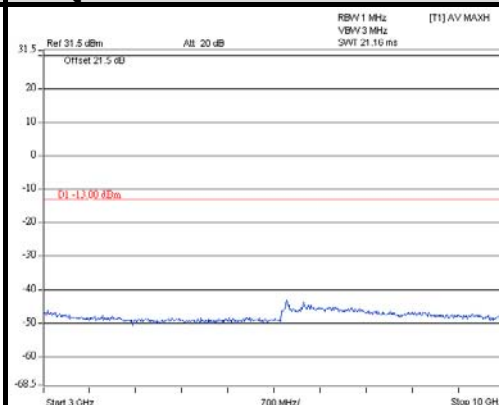
Channel Bandwidth: 20MHz / CHAIN 1

CHANNEL 2175

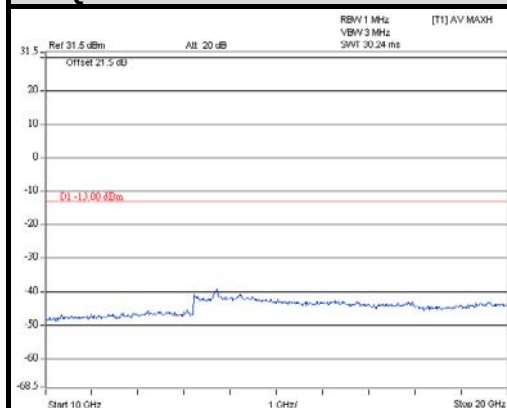
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz

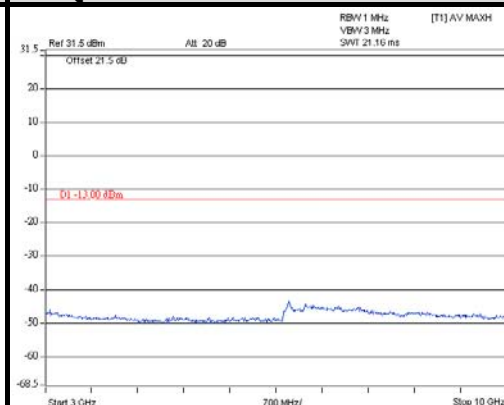
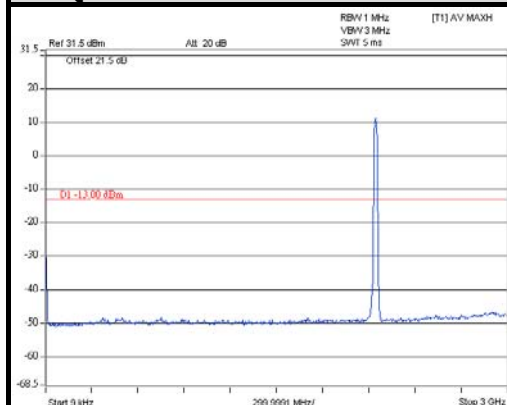


Channel Bandwidth: 20MHz / CHAIN 1

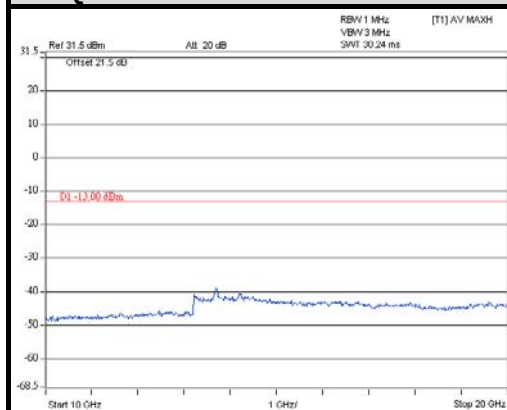
CHANNEL 2300

FREQUENCY RANGE : 9kHz~3GHz

FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz



4.6 RADIATED EMISSION MEASUREMENT

4.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 27.53(h), On any frequency outside a licensee's frequency block,
The power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, the emission limit equal to -13dBm .

4.6.2 TEST PROCEDURES

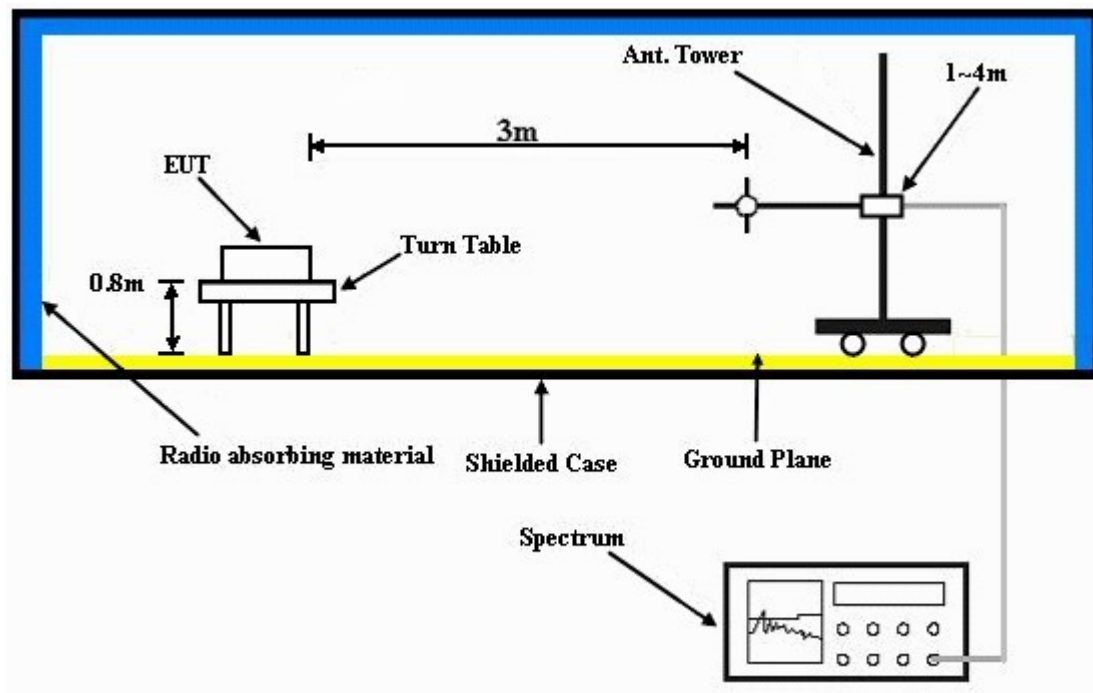
- a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high channel of operational frequency range.)
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated 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.
- c. The substitution 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. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution antenna}$.

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

4.6.3 DEVIATION FROM TEST STANDARD

No deviation

4.6.4 TEST SETUP



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

4.6.5 TEST RESULTS

BELOW 1GHz

CHANNEL BANDWIDTH: 5MHz

MODE	TX channel 1975	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	111.50	-44.89	-51.06	0.42	-50.64	-13.00	-37.64
2	181.30	-51.84	-60.13	3.08	-57.05	-13.00	-44.05
3	286.10	-51.35	-60.44	5.20	-55.24	-13.00	-42.24
4	402.50	-61.98	-66.71	5.28	-61.43	-13.00	-48.43
5	658.60	-66.07	-67.65	4.91	-62.74	-13.00	-49.74
6	937.90	-62.20	-57.27	3.92	-53.35	-13.00	-40.35
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	57.20	-38.11	-35.60	-8.21	-43.81	-13.00	-30.81
2	107.60	-39.52	-44.07	0.58	-43.49	-13.00	-30.49
3	177.40	-48.35	-50.50	2.59	-47.91	-13.00	-34.91
4	286.10	-57.42	-63.60	5.20	-58.40	-13.00	-45.40
5	782.70	-64.65	-59.77	4.25	-55.52	-13.00	-42.52
6	937.90	-62.65	-54.59	3.92	-50.67	-13.00	-37.67

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	TX channel 1975	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-56.82	-40.85	-12.18	-53.03	-13.00	-40.03
2	127.00	-45.94	-52.07	-0.06	-52.13	-13.00	-39.13
3	237.60	-51.67	-62.50	5.42	-57.08	-13.00	-44.08
4	381.10	-58.83	-64.18	5.25	-58.93	-13.00	-45.93
5	742.00	-61.10	-60.15	4.74	-55.41	-13.00	-42.41
6	939.90	-61.09	-56.12	3.93	-52.19	-13.00	-39.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.80	-37.79	-32.37	-11.43	-43.80	-13.00	-30.80
2	127.00	-51.12	-54.18	-0.06	-54.24	-13.00	-41.24
3	233.70	-58.36	-65.50	5.42	-60.08	-13.00	-47.08
4	365.60	-58.90	-63.73	5.22	-58.51	-13.00	-45.51
5	784.70	-63.06	-58.16	4.23	-53.93	-13.00	-40.93
6	937.90	-58.04	-49.98	3.92	-46.06	-13.00	-33.06

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor} = \text{gain of substitution antenna} + \text{cable loss}$



A D T

CHANNEL BANDWIDTH: 10MHz

MODE	TX channel 2000	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	113.40	-45.84	-52.02	0.34	-51.68	-13.00	-38.68
2	286.10	-51.04	-60.13	5.20	-54.93	-13.00	-41.93
3	431.60	-62.17	-66.71	5.15	-61.56	-13.00	-48.56
4	662.40	-66.62	-68.17	4.95	-63.22	-13.00	-50.22
5	802.10	-64.01	-61.75	4.02	-57.73	-13.00	-44.73
6	937.90	-61.84	-56.91	3.92	-52.99	-13.00	-39.99
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	57.20	-37.33	-34.82	-8.21	-43.03	-13.00	-30.03
2	107.60	-37.20	-41.75	0.58	-41.17	-13.00	-28.17
3	177.40	-48.67	-50.82	2.59	-48.23	-13.00	-35.23
4	286.10	-56.86	-63.04	5.20	-57.84	-13.00	-44.84
5	429.60	-61.69	-64.45	5.15	-59.30	-13.00	-46.30
6	860.30	-64.11	-57.71	3.95	-53.76	-13.00	-40.76

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	TX channel 2000	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	47.50	-59.83	-47.53	-10.16	-57.69	-13.00	-44.69
2	127.00	-46.19	-52.32	-0.06	-52.38	-13.00	-39.38
3	239.50	-52.13	-62.79	5.41	-57.38	-13.00	-44.38
4	381.10	-58.94	-64.29	5.25	-59.04	-13.00	-46.04
5	726.50	-60.89	-60.72	4.91	-55.81	-13.00	-42.81
6	937.90	-59.90	-54.97	3.92	-51.05	-13.00	-38.05
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-38.27	-34.15	-12.18	-46.33	-13.00	-33.33
2	127.00	-51.09	-54.15	-0.06	-54.21	-13.00	-41.21
3	348.20	-58.70	-64.09	5.20	-58.89	-13.00	-45.89
4	557.70	-62.15	-62.91	4.62	-58.29	-13.00	-45.29
5	784.70	-65.43	-60.53	4.23	-56.30	-13.00	-43.30
6	937.90	-60.88	-52.82	3.92	-48.90	-13.00	-35.90

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor} = \text{gain of substitution antenna} + \text{cable loss}$



A D T

CHANNEL BANDWIDTH: 15MHz

MODE	TX channel 2025	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	33.90	-58.14	-42.59	-11.68	-54.27	-13.00	-41.27
2	127.00	-45.67	-51.80	-0.06	-51.86	-13.00	-38.86
3	241.50	-52.56	-63.08	5.41	-57.67	-13.00	-44.67
4	383.10	-58.74	-63.98	5.25	-58.73	-13.00	-45.73
5	745.90	-61.27	-60.11	4.68	-55.43	-13.00	-42.43
6	937.90	-56.07	-51.14	3.92	-47.22	-13.00	-34.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	53.30	-39.00	-35.32	-9.05	-44.37	-13.00	-31.37
2	127.00	-50.96	-54.02	-0.06	-54.08	-13.00	-41.08
3	237.60	-57.64	-64.89	5.42	-59.47	-13.00	-46.47
4	511.10	-59.41	-61.31	4.84	-56.47	-13.00	-43.47
5	786.60	-64.28	-59.33	4.19	-55.14	-13.00	-42.14
6	937.90	-57.29	-49.23	3.92	-45.31	-13.00	-32.31

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	TX channel 2025	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	51.30	-55.05	-44.59	-9.46	-54.05	-13.00	-41.05
2	127.00	-45.53	-51.66	-0.06	-51.72	-13.00	-38.72
3	239.50	-52.68	-63.34	5.41	-57.93	-13.00	-44.93
4	383.10	-58.86	-64.10	5.25	-58.85	-13.00	-45.85
5	747.80	-61.20	-59.94	4.65	-55.29	-13.00	-42.29
6	937.90	-54.34	-49.41	3.92	-45.49	-13.00	-32.49
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.90	-35.90	-31.35	-11.93	-43.28	-13.00	-30.28
2	125.10	-51.13	-54.32	-0.03	-54.35	-13.00	-41.35
3	237.60	-57.92	-65.17	5.42	-59.75	-13.00	-46.75
4	425.80	-62.27	-65.16	5.17	-59.99	-13.00	-46.99
5	802.10	-65.85	-60.67	4.02	-56.65	-13.00	-43.65
6	937.90	-59.57	-51.51	3.92	-47.59	-13.00	-34.59

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor} = \text{gain of substitution antenna} + \text{cable loss}$



A D T

CHANNEL BANDWIDTH: 20MHz

MODE	TX channel 2050	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	111.50	-45.28	-51.45	0.42	-51.03	-13.00	-38.03
2	286.10	-51.41	-60.50	5.20	-55.30	-13.00	-42.30
3	392.80	-62.67	-67.44	5.25	-62.19	-13.00	-49.19
4	660.50	-66.34	-67.91	4.93	-62.98	-13.00	-49.98
5	784.70	-64.47	-62.54	4.23	-58.31	-13.00	-45.31
6	937.90	-58.96	-54.03	3.92	-50.11	-13.00	-37.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	55.20	-33.57	-30.47	-8.63	-39.10	-13.00	-26.10
2	109.50	-37.10	-41.58	0.50	-41.08	-13.00	-28.08
3	175.50	-48.97	-50.49	2.34	-48.15	-13.00	-35.15
4	447.10	-61.99	-64.12	5.10	-59.02	-13.00	-46.02
5	662.40	-66.78	-64.80	4.95	-59.85	-13.00	-46.85
6	937.90	-59.13	-51.07	3.92	-47.15	-13.00	-34.15

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	TX channel 2050	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	37.80	-56.77	-41.64	-11.18	-52.82	-13.00	-39.82
2	127.00	-46.19	-52.32	-0.06	-52.38	-13.00	-39.38
3	241.50	-53.15	-63.67	5.41	-58.26	-13.00	-45.26
4	381.10	-58.88	-64.23	5.25	-58.98	-13.00	-45.98
5	742.00	-60.73	-59.78	4.74	-55.04	-13.00	-42.04
6	937.90	-60.82	-55.89	3.92	-51.97	-13.00	-38.97
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.80	-38.11	-32.69	-11.43	-44.12	-13.00	-31.12
2	125.10	-50.98	-54.17	-0.03	-54.20	-13.00	-41.20
3	237.60	-58.09	-65.34	5.42	-59.92	-13.00	-46.92
4	569.30	-63.06	-63.41	4.56	-58.85	-13.00	-45.85
5	784.70	-63.08	-58.18	4.23	-53.95	-13.00	-40.95
6	955.40	-60.98	-52.59	3.91	-48.68	-13.00	-35.68

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

ABOVE 1GHz

CHANNEL BANDWIDTH: 5MHz

MODE	Channel 1975	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4225.0	-29.11	-21.32	6.87	-14.45	-13.00	-1.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4225.0	-35.12	-27.97	6.87	-21.10	-13.00	-8.10

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-32.66	-24.63	6.84	-17.79	-13.00	-4.79
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-36.11	-28.81	6.84	-21.97	-13.00	-8.97

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2375	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4305.0	-29.08	-20.83	6.83	-14.00	-13.00	-1.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4305.0	-33.80	-26.36	6.83	-19.53	-13.00	-6.53

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

CHANNEL BANDWIDTH: 10MHz

MODE	Channel 2000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4230.0	-33.52	-25.70	6.87	-18.83	-13.00	-5.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4230.0	-40.71	-33.55	6.87	-26.68	-13.00	-13.68

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-39.06	-31.03	6.84	-24.19	-13.00	-11.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-41.37	-34.07	6.84	-27.23	-13.00	-14.23

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2350	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4300.0	-33.75	-25.53	6.83	-18.70	-13.00	-5.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4300.0	-41.83	-34.41	6.83	-27.58	-13.00	-14.58

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

CHANNEL BANDWIDTH: 15MHz

MODE	Channel 2025	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4235.0	-42.06	-34.22	6.87	-27.35	-13.00	-14.35
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4235.0	-46.76	-39.58	6.87	-32.71	-13.00	-19.71

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-40.27	-32.24	6.84	-25.40	-13.00	-12.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-49.01	-41.71	6.84	-34.87	-13.00	-21.87

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2325	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4295.0	-45.09	-36.89	6.83	-30.06	-13.00	-17.06
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4295.0	-53.03	-45.62	6.83	-38.79	-13.00	-25.79

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

CHANNEL BANDWIDTH: 20MHz

MODE	Channel 2050	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4240.0	-33.95	-26.07	6.86	-19.21	-13.00	-6.21
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4240.0	-44.36	-37.16	6.86	-30.30	-13.00	-17.30

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-35.16	-27.13	6.84	-20.29	-13.00	-7.29
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4265.0	-39.98	-32.68	6.84	-25.84	-13.00	-12.84

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

MODE	Channel 2300	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Chris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4290.0	-34.19	-26.03	6.84	-19.19	-13.00	-6.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	4290.0	-39.32	-31.94	6.84	-25.10	-13.00	-12.10

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss

5 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:

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

6 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

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