FCC Test Report

Report No.:	RF181105C12-2
FCC ID:	Q9DAPEX0387
Test Model:	APEX0387
Received Date:	Nov. 05, 2018
Test Date:	Nov. 16 to 20, 2018
Issued Date:	Jan. 09, 2019
Applicant:	Hewlett Packard Enterprise Company
Address:	6280 America Center Drive, San Jose, CA 95002, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Testing Laboratory
2022

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Release Control Record

Issue No.	Description	Date Issued
RF181105C12-2	Original release.	Jan. 09, 2019

1 Certificate of Conformity

Product:	AP-387
Brand:	HPE / Aruba
Test Model:	APEX0387
Sample Status:	ENGINEERING SAMPLE
Applicant:	Hewlett Packard Enterprise Company
Test Date:	Nov. 16 to 20, 2018
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.255) ANSI C63.10: 2013

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 : _____ , **Date:** Jan. 09, 2019

Claire Kuan / Specialist

Approved by : _____ , **Date:** Jan. 09, 2019

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.255)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -13.38dB at 0.32969MHz.
15.255(e)	6dB Bandwidth	-	Reference only.
15.255 (c) & (e)	Output Power	PASS	Meet the requirement of limit.
15.255(d)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.0dB at 62.52MHz.
15.255(f)	Frequency Stability	PASS	Meet the requirement of limit.

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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.19 dB
	40GHz ~ 200GHz	5.41 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	AP-387
Brand	HPE / Aruba
Test Model	APEX0387
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 57V from POE
Modulation Type	π/2-DBPSK, π/2-BPSK, π/2-16QAM, OFDM-SQPSK, OFDM-QPSK
Modulation Technology	OFDM
Transfer Rate	OFDM (2079.00Mb/s)
Operating Frequency	58.32GHz ~ 62.64GHz
Output Power (EIRP)	58.32 GHz: 40.67 dBm 60.48 GHz: 41.1 dBm 62.64 GHz: 39.53dBm
Array Gain	58.32 GHz: 23.26 dBi 60.48 GHz: 24.49 dBi 62.64 GHz: 22.70 dBi
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The device contains 5GHz WLAN, Bluetooth and WiGig technology.
2. Simultaneously transmission condition.

Condition	Technology		
1	WLAN (5GHz)	WiGig (60GHz)	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

3. The antennas provided to the EUT, please refer to the following table:

WLAN antenna spec.				
Transmitter Circuit	Frequency range (GHz)	Antenna Net Gain (dBi)	Antenna Type	Antenna Connector
Chain (0)	5.15 ~ 5.85	9.6	Directional	I-PEX
Chain (1)	5.15 ~ 5.85	9.6	Directional	I-PEX

WiGig antenna spec.			
Frequency range (GHz)	Antenna Net Gain (dBi)	Antenna Type	Antenna Connector
57.44GHZ ~ 63.5GHz	24.49	Printed phased array	None / Integral

Bluetooth antenna spec.			
Frequency range (GHz)	Antenna Net Gain (dBi)	Antenna Type	Antenna Connector
2.4 ~ 2.4835	4.3	Omnidirectional	I-PEX

4. The power setting are list as below:

Frequency (GHz)	Power Setting	Antenna Sector#
58.32	1	60
60.48	2	60
62.64	1	65

5. 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 Description of Test Modes

3 channels are provided for EUT

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	58.32GHz	2	60.48GHz	3	62.64GHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO						DESCRIPTION
	PLC	BW	OP	FS	RE < 1G	RE ≥ 1G	
-	√	√	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission **BW:** 6dB Bandwidth
OP: Output Power **FS:** Frequency Stability
RE < 1G: Radiated Emission below 1GHz **RE ≥ 1G:** Radiated Emission above 1GHz

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
1, 2, 3	1, 2, 3	OFDM	DPBSK	27.5Mbps

6dB Bandwidth Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
1, 2, 3	1, 2, 3	OFDM	DPBSK	27.5Mbps

Frequency stability test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
1, 2, 3	2	OFDM	DPBSK	27.5Mbps

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
1, 2, 3	1, 2, 3	OFDM	DPBSK	27.5Mbps

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
1, 2, 3	1, 2, 3	OFDM	DPBSK	27.5Mbps

Antenna Port Conducted Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
1, 2, 3	1, 2, 3	OFDM	DPBSK	27.5Mbps

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz	Rey Chen
RE<1G	23deg. C, 65%RH	120Vac, 60Hz	Rey Chen
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Weiwei Lo

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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
B.	POE	Microsemi	PD9001GO	NA	NA	Supplied by client

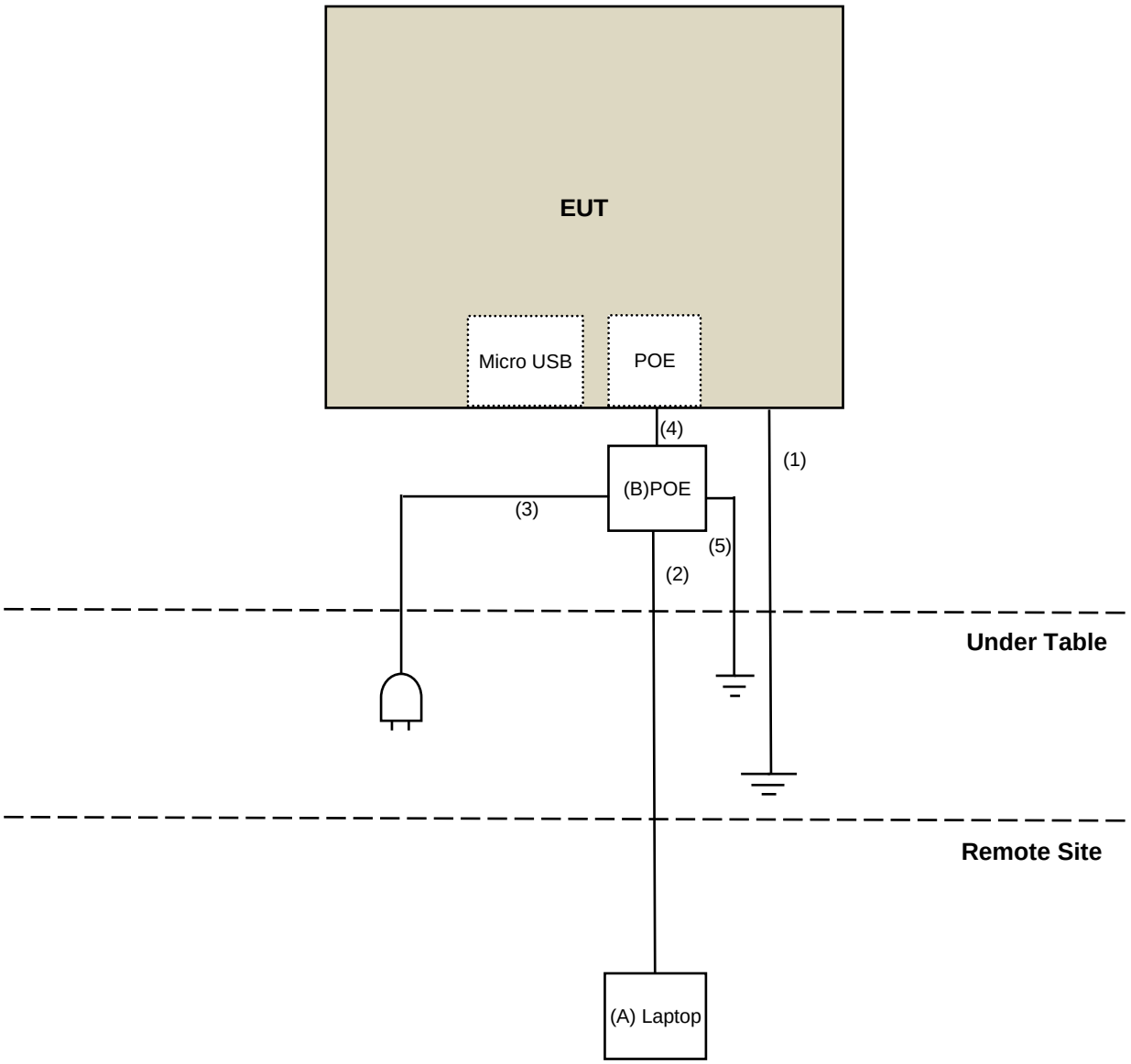
Note:

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

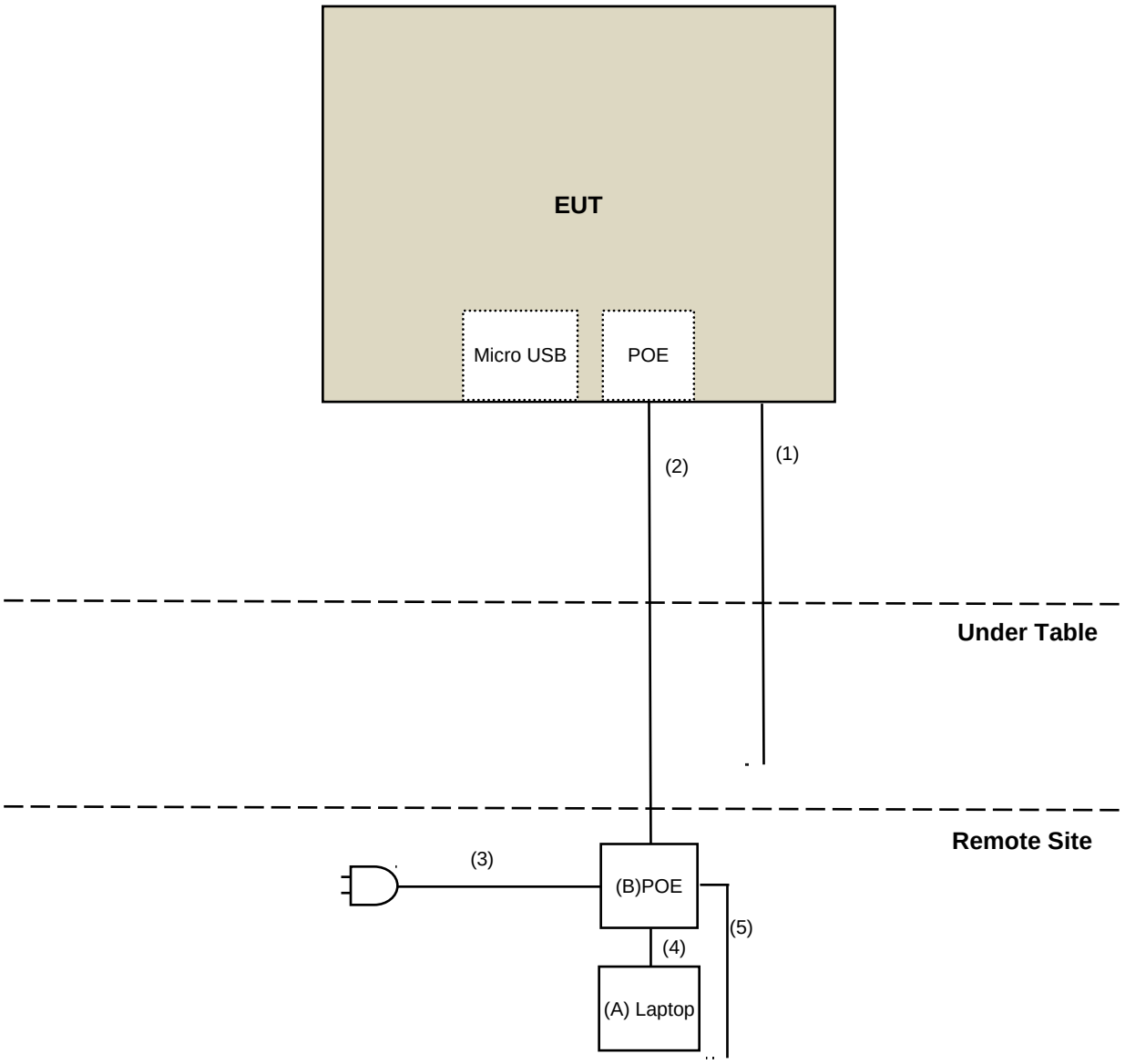
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Grounding cable	1	1.8	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	AC Cable	1	2.95	No	0	Provided by Lab
4.	RJ-45 Cable	1	1	No	0	Provided by Lab
5.	Grounding cable	1	1.8	No	0	Provided by Lab

3.3.1 Configuration of System under Test

For conducted emission test:



For radiated emission test:



3.4 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 Part 15, Subpart C (15.255)
ANSI C63.10-2013
FCC KDB 200443 D02 RF Detector Method v01

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

4 Test Types and Results

4.1 Radiated Emission Measurement

4.1.1 Limits of Radiated Emission Measurement

Spurious Emission	
Frequency Range	Limitation
Radiated emissions below 40GHz	Part 15.209
Between 40GHz and 200GHz	90pW/cm^2 (at 3 meter)
Note: The levels of the spurious emissions shall not exceed the level of the fundamental emission	

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.

4.1.2 Test Instruments

Below 40GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200	160922	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150317	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150322	Jan. 29, 2018	Jan. 28, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160924	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
AC Power Source Extech Electronics	6205	1440452	NA	NA
DC Power Supply Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 10, 2018	Jan. 09, 2019
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Nov. 16 to 17, 2018

Above 40GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250254	Nov. 21, 2017	Nov. 20, 2018
*Harmonic Mixer (33~55GHz) OML	M22HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (33~55GHz) OML	M22RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (50~75GHz) OML	M15RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (50~75GHz) OML	M15HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (75~110GHz) OML	M10HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (75~110GHz) OML	M10RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (110~170GHz) OML	M06RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna(110~170GHz) OML	M06HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Harmonic Mixer (140~220GHz) OML	M05HWD	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Horn Antenna (140~220GHz) OML	M05RH	110215-1	Oct. 17, 2017	Oct. 16, 2019
*Diplexer EMCI	DPL26	DPL26_01	Oct. 17, 2017	Oct. 16, 2019
*Diplexer EMCI	DPL26	DPL26_02	Oct. 17, 2017	Oct. 16, 2019
*Precision 30dB Attenuator Keysight	11708A	MY55260015	Oct. 17, 2017	Oct. 16, 2019
*Zero-Bias Detector (50~75GHz) Vdi	WR15ZBD	WR15R5 1-30	Oct. 17, 2017	Oct. 16, 2019
4CH Infiniivision Oscilloscope Keysight	DSOX6004A	MY55190202	Dec. 13, 2017	Dec. 12, 2018
*WR15CH Conical Horn Keysight	WR15CH	WR15CH-01	Oct. 17, 2017	Oct. 16, 2019
*WR10CH Conical Horn Keysight	WR10CH	WR10CH-01	Oct. 17, 2017	Oct. 16, 2019
*Millimeter-Wave Signal Generator Frequency Extension Module (50~75 GHz) Keysight	E8257DV15	US54250106	Oct. 17, 2017	Oct. 16, 2019
PSG analog signal generator Keysight	E8257D	MY53401987	June 26, 2018	June 25, 2019
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Spectrum Analyzer Keysight	N9030A	MY55410176	July 06, 2018	July 05, 2019
*Waveguide Harmonic Mixer Keysight	M1971E	MY55270157	Oct. 17, 2017	Oct. 16, 2019

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Tested Date: Nov. 19, 2018

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission 30MHz to 40GHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters (30MHz-18GHz) / 1.5 meters (18GHz-40GHz) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 40GHz

a. Connect the test antenna covering the appropriate frequency range to a spectrum analyzer via an external mixer to the spectrum analyzer.

b. Set spectrum analyzer RBW = 1 MHz, VBW = 3 MHz, average detector.

c. Calculate the distance to the far field boundary and determine the maximum measurement distance.

d. Perform an exploratory search for emissions and determine the approximate direction at which each observed emission emanates from the EUT.

e. Exploratory measurements be made at a closer distance than the validated maximum measurement distance.

f. Perform a final measurement; begin with the test antenna at the approximate position where the maximum level occurred during the exploratory scan.

g. Slowly scan the test antenna around this position, slowly vary the test antenna polarization by rotating through at least 0° to 180°, and slowly vary the orientation of the test antenna to find the final position, polarization, and orientation at which the maximum level of the emission is observed.

h. Record the measured reading with the test antenna fixed at this maximized position, polarization, and orientation. Record the measurement distance.

i. Calculate the maximum field strength of the emission at the measurement distance and the adjusted/corrected power at the output of the test antenna.

j. Calculate the EIRP from the measured field strength and then convert to the linear.

k. Calculate the power density at the distance specified by the limit from the field strength at the distance specified by the limit.

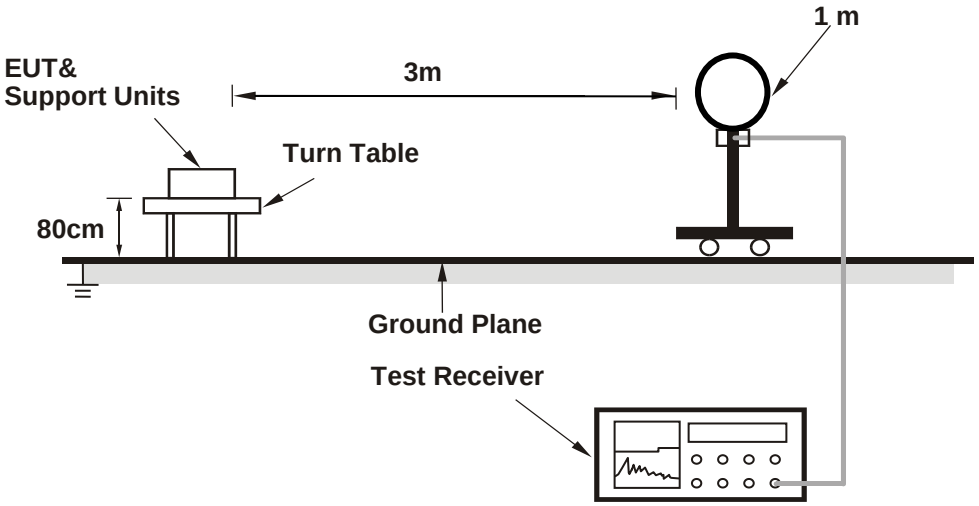
l. Repeat the preceding sequence for every emission observed in the frequency band under investigation.

4.1.4 Deviation from Test Standard

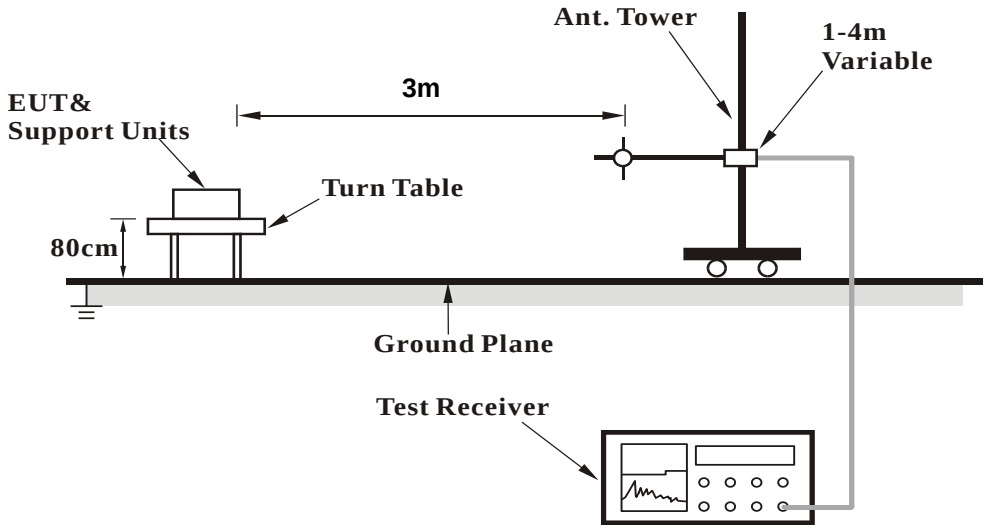
No deviation.

4.1.5 Test Setup

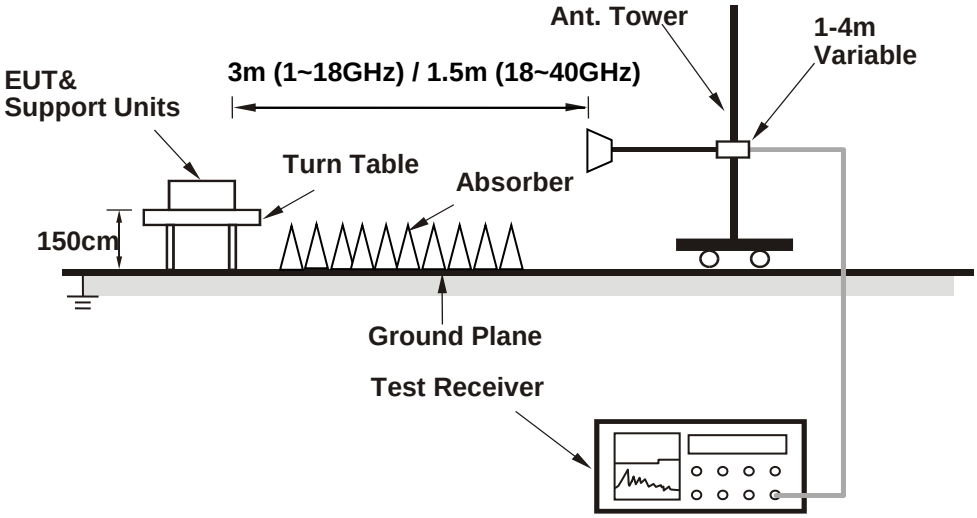
For Radiated emission below 30MHz



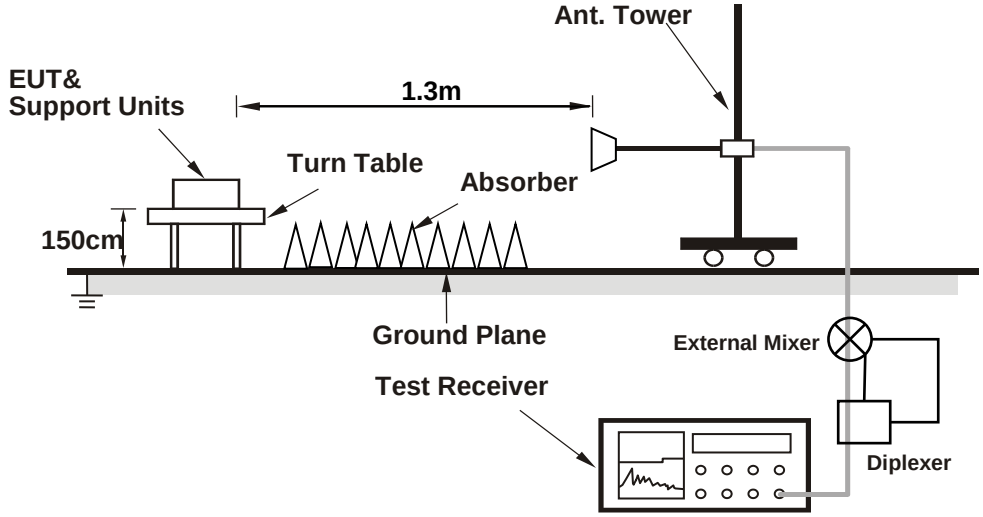
For Radiated emission 30MHz to 1GHz



For Radiated emission 1GHz to 40GHz



For Radiated emission above 40 GHz



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software has been activated to set the EUT on specific status.

4.1.7 Test Results

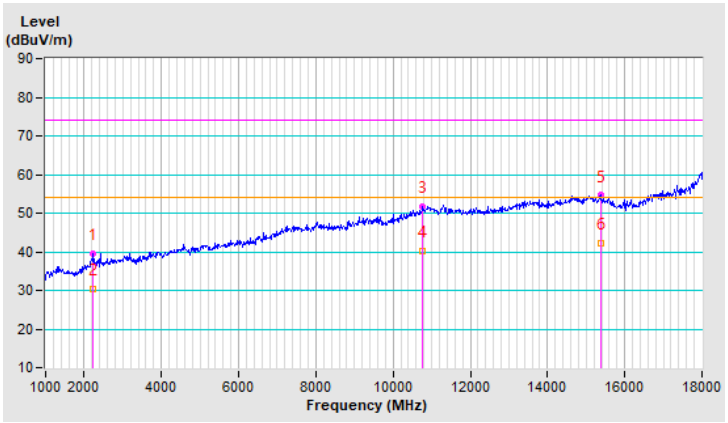
Above 1GHz Data:

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2233.78	39.5 PK	74.0	-34.5	1.49 H	269	46.2	-6.7
2	2233.78	30.3 AV	54.0	-23.7	1.49 H	269	37.0	-6.7
3	10765.23	51.7 PK	74.0	-22.3	2.17 H	234	42.9	8.8
4	10765.23	40.3 AV	54.0	-13.7	2.17 H	234	31.5	8.8
5	15392.20	54.6 PK	74.0	-19.4	3.02 H	158	43.6	11.0
6	15392.20	42.2 AV	54.0	-11.8	3.02 H	158	31.2	11.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

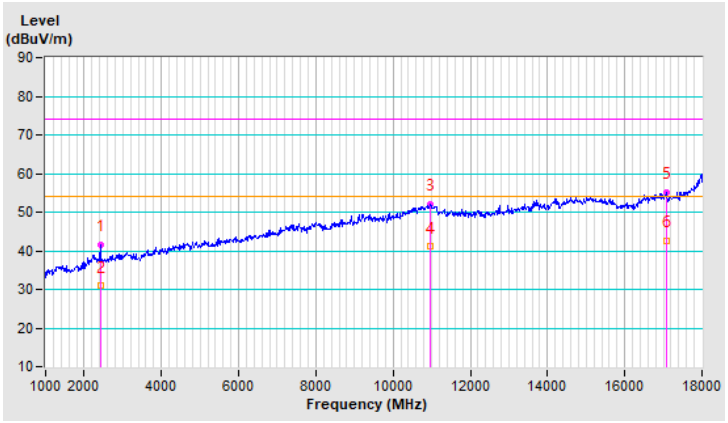


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2416.10	41.6 PK	74.0	-32.4	2.43 V	155	48.8	-7.2
2	2416.10	30.9 AV	54.0	-23.1	2.43 V	155	38.1	-7.2
3	10962.85	52.0 PK	74.0	-22.0	1.35 V	179	42.5	9.5
4	10962.85	41.1 AV	54.0	-12.9	1.35 V	179	31.6	9.5
5	17070.53	55.2 PK	74.0	-18.8	2.17 V	325	41.5	13.7
6	17070.53	42.7 AV	54.0	-11.3	2.17 V	325	29.0	13.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

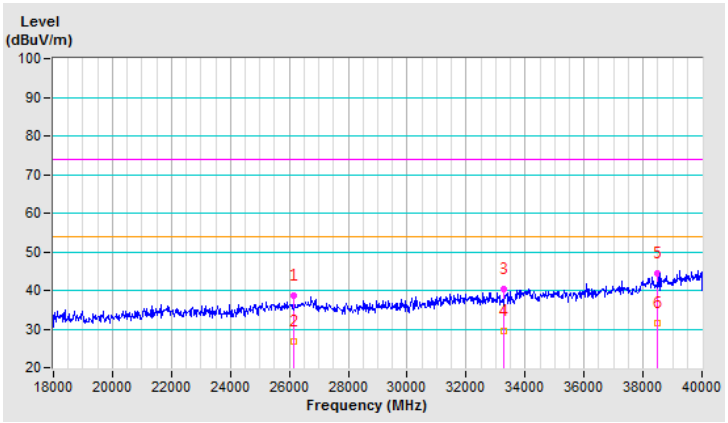
ANTENNA POLARITY: HORIZONTAL

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	26142.30	38.8 PK	74.0	-35.2	1.55 H	138	56.0	-17.2
2	26142.30	26.9 AV	54.0	-27.1	1.55 H	138	44.1	-17.2
3	33289.64	40.3 PK	74.0	-33.7	1.40 H	149	59.5	-19.2
4	33289.64	29.5 AV	54.0	-24.5	1.40 H	149	48.7	-19.2
5	38481.65	44.5 PK	74.0	-29.5	1.62 H	261	58.5	-14.0
6	38481.65	31.6 AV	54.0	-22.4	1.62 H	261	45.6	-14.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. Shorter measurement distances was used to improve the measurement system's noise floor. As standard description is based on the measurement in distance of 3 meters, the data obtained at 1.5-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1.5 meter distance (dBuV) -20log(3/1.5)(dB)
   = Test value at 1.5 meter distance (dBuV) -6.02(dB).

   *Measurements made at 1.5 meter distance. Test value converted to account for 3-meter measurement distance.



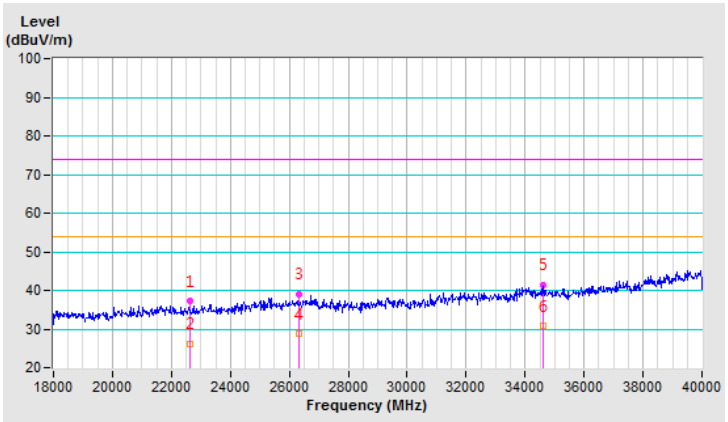
CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

ANTENNA POLARITY: VERTICAL								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	22636.52	37.2 PK	74.0	-36.8	1.49 V	313	56.4	-19.2
2	22636.52	26.1 AV	54.0	-27.9	1.49 V	313	45.3	-19.2
3	26315.12	39.1 PK	74.0	-34.9	1.62 V	127	55.8	-16.7
4	26315.12	28.7 AV	54.0	-25.3	1.62 V	127	45.4	-16.7
5	34599.00	41.3 PK	74.0	-32.7	1.58 V	256	60.5	-19.2
6	34599.00	30.7 AV	54.0	-23.3	1.58 V	256	49.9	-19.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. Shorter measurement distances was used to improve the measurement system's noise floor. As standard description is based on the measurement in distance of 3 meters, the data obtained at 1.5-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1.5 meter distance (dBuV) -20log(3/1.5)(dB)
   = Test value at 1.5 meter distance (dBuV) -6.02(dB).

   *Measurements made at 1.5 meter distance. Test value converted to account for 3-meter measurement distance.



CHANNEL	TX Channel 1	DETECTOR FUNCTION	Average (AV)
FREQUENCY RANGE	40GHz ~ 200GHz		

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Raw Value (dBuV/M)	Correction Factor (dB)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	116.64	-14.5	87.9	-102.4	31.373	90
2	200	-18.0	84.4	-102.4	14.014	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Raw Value (dBuV/m)	Correction Factor (dB)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	116.64	-13.9	88.5	-102.4	36.021	90
2	200	-15.1	87.3	-102.4	27.325	90

Note:

1.The measured power level is converted to EIRP using the equation:

EIRP = E_{Meas}+20*log(d_{Meas})-104.7=Raw Value (dBuV/m)+Correction Factor(dB)

where:
E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m
d_{Meas} is the measurement distance, in m. (Measurements made at 1.3 meter distance)
Correction Factor (dB) is 20*log(d_{Meas})

2. The EIRP is converted to power density(PD) using the equation:

PD=$EIRP/(4\pi d\text{^}2)$

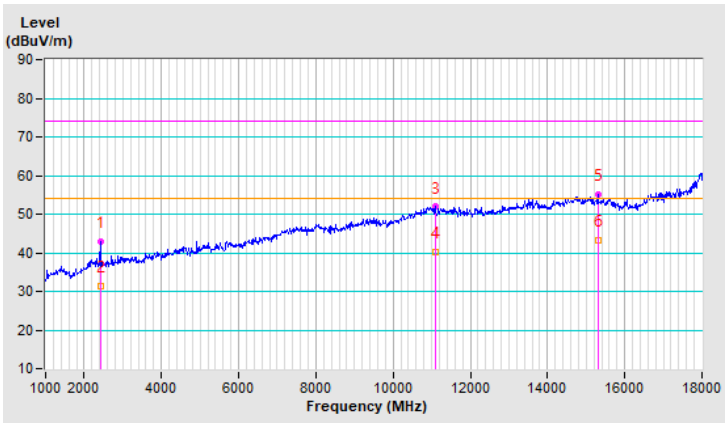
where:
PD is the power density at the distance specified by the limit, in W/m^2
EIRP is the equivalent isotropically radiated power, in watts
d is the distance at which the power density limit is specified, in m.
(This calculation considers the distance of 3 meters)

CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2416.53	42.9 PK	74.0	-31.1	1.25 H	337	50.1	-7.2
2	2416.53	31.3 AV	54.0	-22.7	1.25 H	337	38.5	-7.2
3	11087.37	51.9 PK	74.0	-22.1	2.89 H	106	43.2	8.7
4	11087.37	40.2 AV	54.0	-13.8	2.89 H	106	31.5	8.7
5	15309.75	55.1 PK	74.0	-18.9	1.75 H	223	44.5	10.6
6	15309.75	43.3 AV	54.0	-10.7	1.75 H	223	32.7	10.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

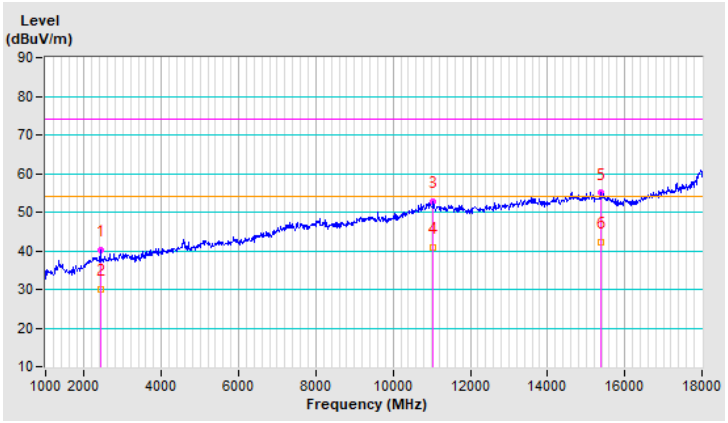


CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2416.53	40.2 PK	74.0	-33.8	1.88 V	124	47.4	-7.2
2	2416.53	30.0 AV	54.0	-24.0	1.88 V	124	37.2	-7.2
3	11041.90	52.7 PK	74.0	-21.3	1.58 V	236	43.7	9.0
4	11041.90	40.8 AV	54.0	-13.2	1.58 V	236	31.8	9.0
5	15395.60	55.0 PK	74.0	-19.0	1.02 V	233	44.0	11.0
6	15395.60	42.3 AV	54.0	-11.7	1.02 V	233	31.3	11.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



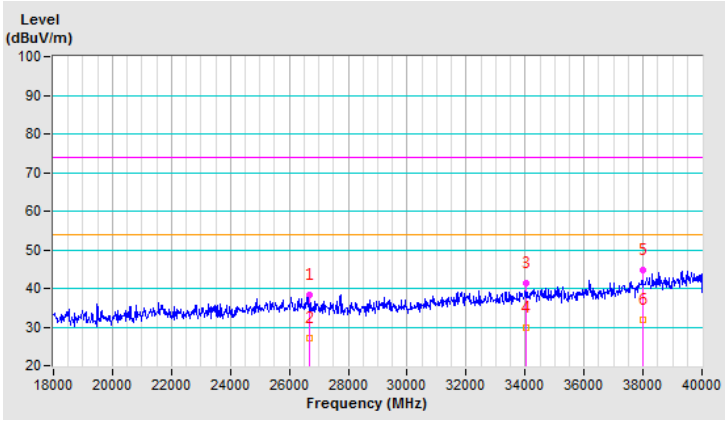
CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

ANTENNA POLARITY: HORIZONTAL								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	26685.44	38.4 PK	74.0	-35.6	1.61 H	143	55.2	-16.8
2	26685.44	27.2 AV	54.0	-26.8	1.61 H	143	44.0	-16.8
3	34040.18	41.4 PK	74.0	-32.6	1.43 H	114	60.0	-18.6
4	34040.18	29.9 AV	54.0	-24.1	1.43 H	114	48.5	-18.6
5	37982.94	44.7 PK	74.0	-29.3	1.56 H	267	59.3	-14.6
6	37982.94	31.8 AV	54.0	-22.2	1.56 H	267	46.4	-14.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. Shorter measurement distances was used to improve the measurement system's noise floor. As standard description is based on the measurement in distance of 3 meters, the data obtained at 1.5-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1.5 meter distance (dBuV) -20log(3/1.5)(dB)
   = Test value at 1.5 meter distance (dBuV) -6.02(dB).

   *Measurements made at 1.5 meter distance. Test value converted to account for 3-meter measurement distance.



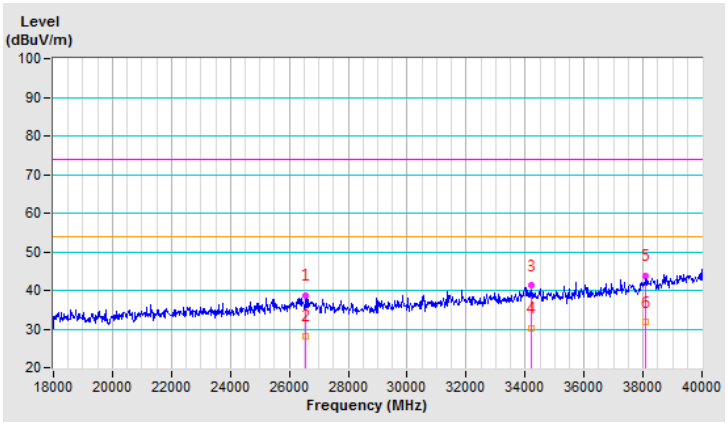
CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

ANTENNA POLARITY: VERTICAL								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	26542.25	38.7 PK	74.0	-35.3	1.44 V	216	55.5	-16.8
2	26542.25	28.1 AV	54.0	-25.9	1.44 V	216	44.9	-16.8
3	34193.24	41.2 PK	74.0	-32.8	1.49 V	227	60.0	-18.8
4	34193.24	30.3 AV	54.0	-23.7	1.49 V	227	49.1	-18.8
5	38098.98	43.8 PK	74.0	-30.2	1.65 V	302	58.7	-14.9
6	38098.98	31.7 AV	54.0	-22.3	1.65 V	302	46.6	-14.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. Shorter measurement distances was used to improve the measurement system's noise floor. As standard description is based on the measurement in distance of 3 meters, the data obtained at 1.5-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1.5 meter distance (dBuV) -20log(3/1.5)(dB)
   = Test value at 1.5 meter distance (dBuV) -6.02(dB).

   *Measurements made at 1.5 meter distance. Test value converted to account for 3-meter measurement distance.



CHANNEL	TX Channel 2	DETECTOR FUNCTION	Average (AV)
FREQUENCY RANGE	40GHz ~ 200GHz		

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Raw Value (dBuV/m)	Correction Factor (dB)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	120.96	-14.2	88.2	-102.4	33.617	90
2	200	-14.7	87.7	-102.4	29.961	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Raw Value (dBuV/m)	Correction Factor (dB)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	120.96	-13.9	88.5	-102.4	36.021	90
2	200	-14.4	88.0	-102.4	32.104	90

Note:

1.The measured power level is converted to EIRP using the equation:

EIRP = E_{Meas}+20*log(d_{Meas})-104.7=Raw Value (dBuV/m)+Correction Factor(dB)

where:
E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m
d_{Meas} is the measurement distance, in m. (Measurements made at 1.3 meter distance)
Correction Factor (dB) is 20*log(d_{Meas})

2. The EIRP is converted to power density(PD) using the equation:

PD=$EIRP/(4\pi d\text{^}2)$

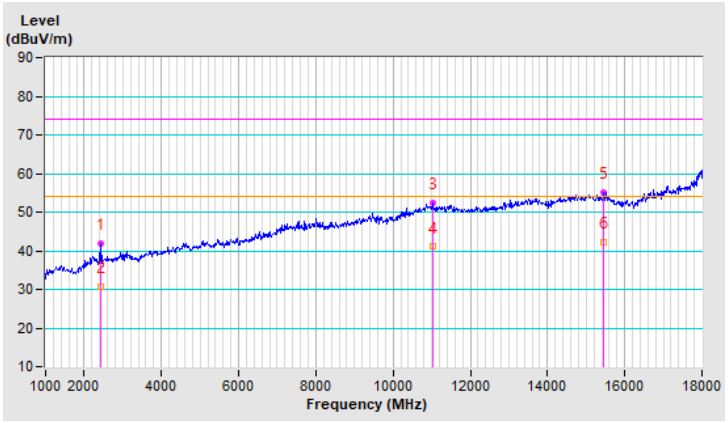
where:
PD is the power density at the distance specified by the limit, in W/m^2
EIRP is the equivalent isotropically radiated power, in watts
d is the distance at which the power density limit is specified, in m.
(This calculation considers the distance of 3 meters)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2416.53	41.9 PK	74.0	-32.1	1.21 H	106	49.1	-7.2
2	2416.53	30.7 AV	54.0	-23.3	1.21 H	106	37.9	-7.2
3	11022.77	52.5 PK	74.0	-21.5	3.17 H	247	43.3	9.2
4	11022.77	41.1 AV	54.0	-12.9	3.17 H	247	31.9	9.2
5	15457.65	55.1 PK	74.0	-18.9	1.54 H	317	44.0	11.1
6	15457.65	42.3 AV	54.0	-11.7	1.54 H	317	31.2	11.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

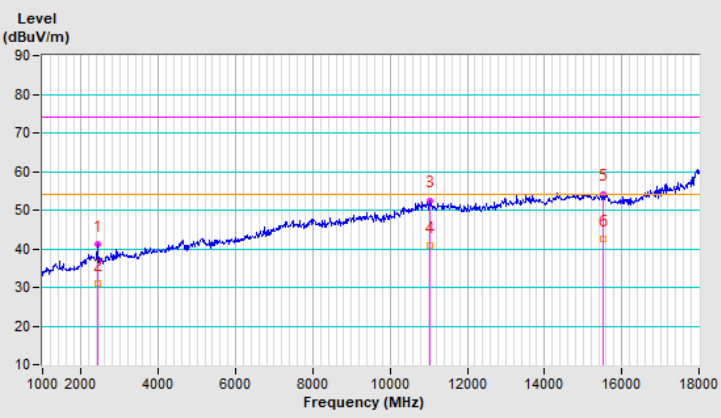


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2416.53	41.1 PK	74.0	-32.9	1.12 V	354	48.3	-7.2
2	2416.53	30.9 AV	54.0	-23.1	1.12 V	354	38.1	-7.2
3	11028.30	52.3 PK	74.0	-21.7	2.15 V	317	43.2	9.1
4	11028.30	40.7 AV	54.0	-13.3	2.15 V	317	31.6	9.1
5	15510.35	54.2 PK	74.0	-19.8	1.76 V	116	43.1	11.1
6	15510.35	42.4 AV	54.0	-11.6	1.76 V	116	31.3	11.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



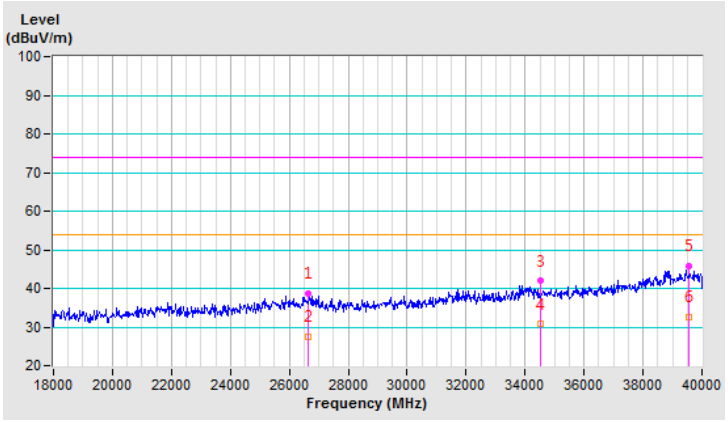
CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

ANTENNA POLARITY: HORIZONTAL								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	26660.76	38.6 PK	74.0	-35.4	1.42 H	257	55.5	-16.9
2	26660.76	27.4 AV	54.0	-26.6	1.42 H	257	44.3	-16.9
3	34538.88	41.9 PK	74.0	-32.1	1.56 H	213	61.1	-19.2
4	34538.88	30.7 AV	54.0	-23.3	1.56 H	213	49.9	-19.2
5	39535.85	45.8 PK	74.0	-28.2	1.47 H	239	57.9	-12.1
6	39535.85	32.6 AV	54.0	-21.4	1.47 H	239	44.7	-12.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. Shorter measurement distances was used to improve the measurement system's noise floor. As standard description is based on the measurement in distance of 3 meters, the data obtained at 1.5-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1.5 meter distance (dBuV) -20log(3/1.5)(dB)
   = Test value at 1.5 meter distance (dBuV) -6.02(dB).

   *Measurements made at 1.5 meter distance. Test value converted to account for 3-meter measurement distance.



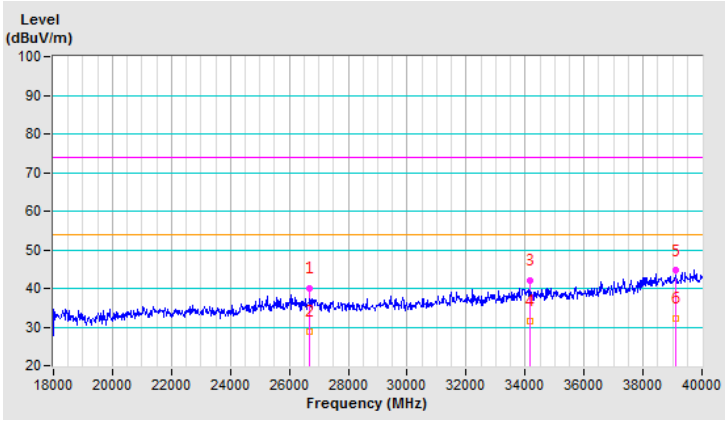
CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

ANTENNA POLARITY: VERTICAL								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	26675.57	40.0 PK	74.0	-34.0	1.52 V	114	56.8	-16.8
2	26675.57	28.9 AV	54.0	-25.1	1.52 V	114	45.7	-16.8
3	34156.21	42.0 PK	74.0	-32.0	1.65 V	331	60.9	-18.9
4	34156.21	31.6 AV	54.0	-22.4	1.65 V	331	50.5	-18.9
5	39121.09	44.6 PK	74.0	-29.4	1.45 V	251	58.1	-13.5
6	39121.09	32.3 AV	54.0	-21.7	1.45 V	251	45.8	-13.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. Shorter measurement distances was used to improve the measurement system's noise floor. As standard description is based on the measurement in distance of 3 meters, the data obtained at 1.5-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1.5 meter distance (dBuV) -20log(3/1.5)(dB)
   = Test value at 1.5 meter distance (dBuV) -6.02(dB).

   *Measurements made at 1.5 meter distance. Test value converted to account for 3-meter measurement distance.



CHANNEL	TX Channel 3	DETECTOR FUNCTION	Average (AV)
FREQUENCY RANGE	40GHz ~ 200GHz		

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Raw Value (dBuV/m)	Correction Factor (dB)	Power Density (pW/cm2)	Power Density Limit (pW/cm^2)
1	125.28	-13.8	88.6	-102.4	36.86	90
2	200	-14.3	88.1	-102.4	32.852	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Raw Value (dBuV/m)	Correction Factor (dB)	Power Density (pW/cm2)	Power Density Limit (pW/cm^2)
1	125.28	-13.7	88.7	-102.4	37.719	90
2	200	-14.2	88.2	-102.4	33.617	90

Note:

1.The measured power level is converted to EIRP using the equation:

EIRP = E_{Meas}+20*log(d_{Meas})-104.7=Raw Value (dBuV/m)+Correction Factor(dB)

where:
E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m
d_{Meas} is the measurement distance, in m. (Measurements made at 1.3 meter distance)
Correction Factor (dB) is 20*log(d_{Meas})

2. The EIRP is converted to power density(PD) using the equation:

PD=$EIRP/(4\pi d\text{^}2)$

where:
PD is the power density at the distance specified by the limit, in W/m^2
EIRP is the equivalent isotropically radiated power, in watts
d is the distance at which the power density limit is specified, in m.
(This calculation considers the distance of 3 meters)

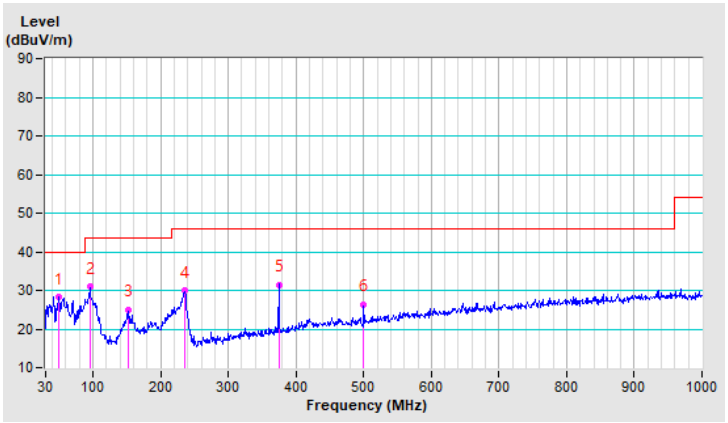
Below 1GHz Data:

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	49.25	28.2 QP	40.0	-11.8	1.50 H	138	37.9	-9.7
2	96.24	30.9 QP	43.5	-12.6	2.50 H	177	44.4	-13.5
3	151.54	24.9 QP	43.5	-18.6	2.00 H	247	33.9	-9.0
4	235.74	29.9 QP	46.0	-16.1	1.50 H	133	41.3	-11.4
5	375.00	31.4 QP	46.0	-14.6	3.00 H	189	39.2	-7.8
6	500.04	26.2 QP	46.0	-19.8	1.00 H	233	31.5	-5.3

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

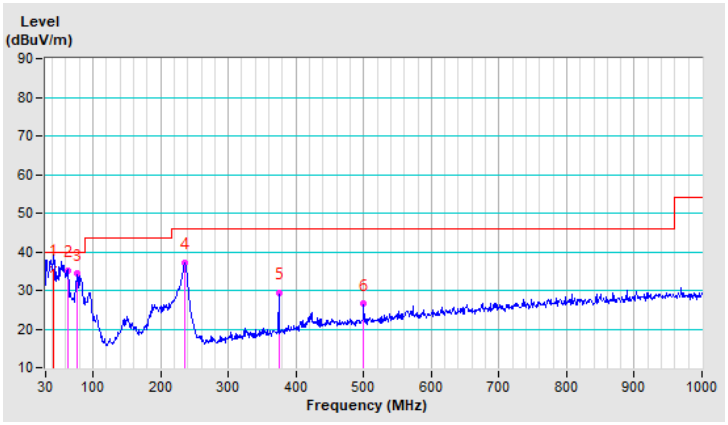


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	42.45	35.5 QP	40.0	-4.5	2.00 V	98	45.0	-9.5
2	62.59	35.2 QP	40.0	-4.8	1.00 V	302	46.3	-11.1
3	76.88	34.3 QP	40.0	-5.7	2.50 V	114	47.9	-13.6
4	235.71	37.3 QP	46.0	-8.7	1.50 V	233	48.7	-11.4
5	375.00	29.4 QP	46.0	-16.6	1.00 V	347	37.2	-7.8
6	500.05	26.5 QP	46.0	-19.5	1.50 V	248	31.8	-5.3

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

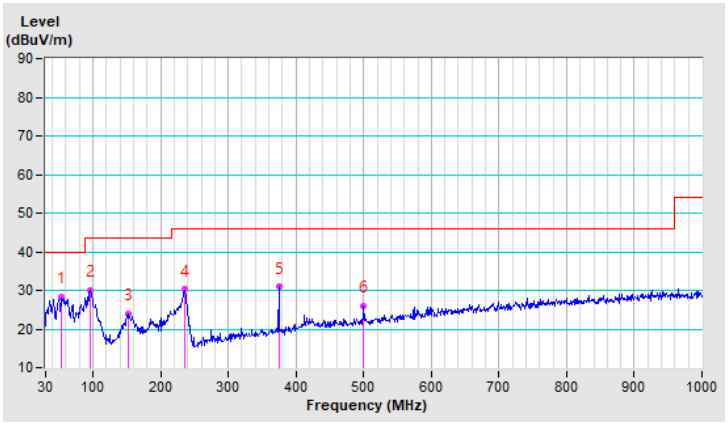


CHANNEL	TX Channel 2	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	53.84	28.4 QP	40.0	-11.6	1.00 H	233	38.4	-10.0
2	95.72	30.0 QP	43.5	-13.5	2.00 H	167	43.5	-13.5
3	151.27	24.0 QP	43.5	-19.5	2.00 H	154	33.0	-9.0
4	235.59	30.2 QP	46.0	-15.8	1.50 H	137	41.6	-11.4
5	375.05	30.9 QP	46.0	-15.1	1.50 H	222	38.7	-7.8
6	500.00	26.1 QP	46.0	-19.9	1.50 H	337	31.4	-5.3

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

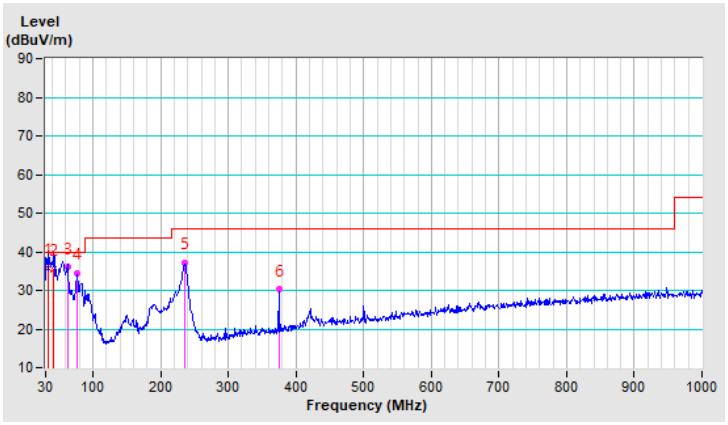


CHANNEL	TX Channel 2	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.83	35.9 QP	40.0	-4.1	1.00 V	233	45.9	-10.0
2	42.25	35.5 QP	40.0	-4.5	2.50 V	167	45.0	-9.5
3	**62.52**	**36.0 QP**	**40.0**	**-4.0**	**1.33 V**	**169**	**47.1**	**-11.1**
4	76.85	34.5 QP	40.0	-5.5	1.00 V	269	48.1	-13.6
5	234.91	37.1 QP	46.0	-8.9	3.00 V	143	48.5	-11.4
6	375.00	30.2 QP	46.0	-15.8	1.50 V	325	38.0	-7.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

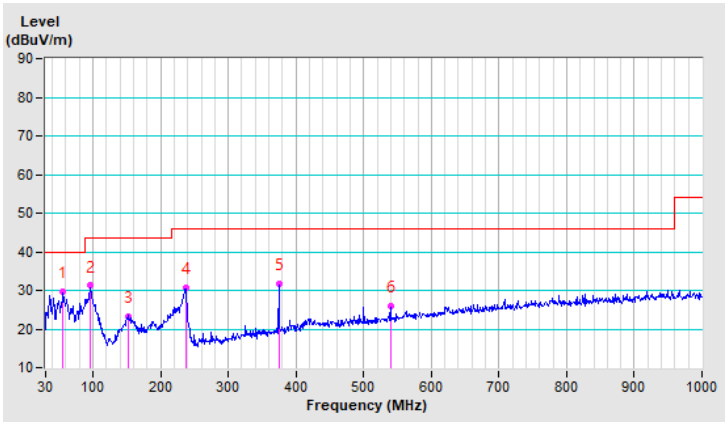


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.97	29.7 QP	40.0	-10.3	1.00 H	287	39.9	-10.2
2	96.39	31.2 QP	43.5	-12.3	1.50 H	354	44.7	-13.5
3	153.10	23.2 QP	43.5	-20.3	2.00 H	197	32.2	-9.0
4	236.61	30.6 QP	46.0	-15.4	1.50 H	248	41.9	-11.3
5	375.07	31.8 QP	46.0	-14.2	2.00 H	256	39.6	-7.8
6	540.12	25.9 QP	46.0	-20.1	1.50 H	179	30.4	-4.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

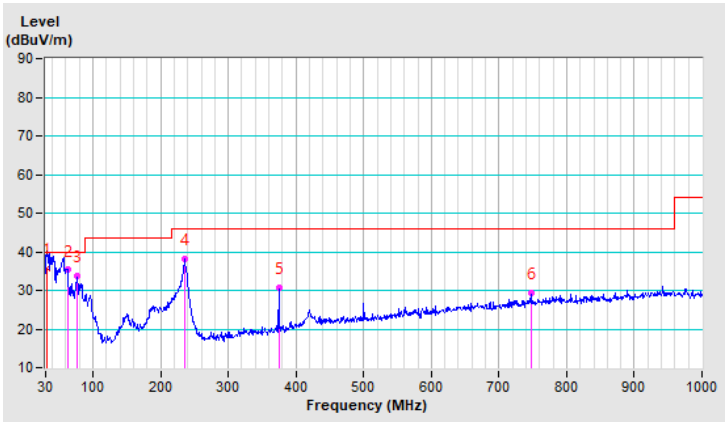


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	32.26	35.8 QP	40.0	-4.2	1.50 V	360	45.9	-10.1
2	62.45	35.3 QP	40.0	-4.7	2.50 V	179	46.4	-11.1
3	76.45	33.8 QP	40.0	-6.2	2.00 V	197	47.3	-13.5
4	236.31	38.2 QP	46.0	-7.8	1.50 V	233	49.5	-11.3
5	375.18	30.6 QP	46.0	-15.4	2.50 V	248	38.4	-7.8
6	747.08	29.3 QP	46.0	-16.7	1.50 V	195	30.5	-1.2

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. Tested Date: Nov. 20, 2018

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

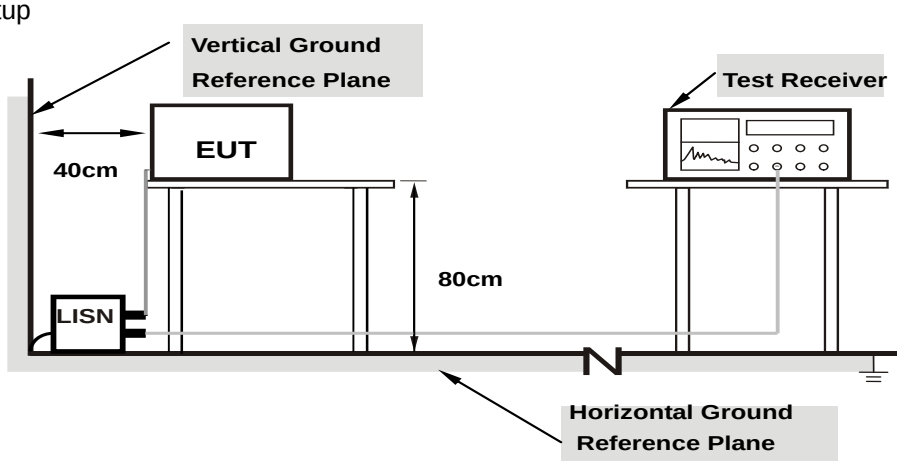
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

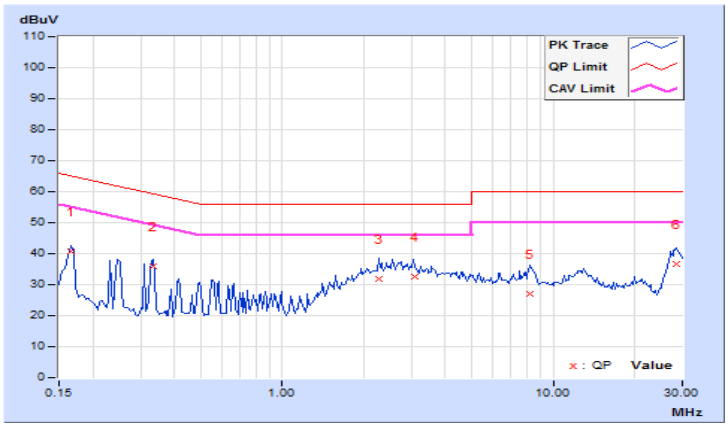
4.2.7 Test Results

Channel	TX Channel 1		
Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.03	30.76	25.80	40.79	35.83	65.18	55.18	-24.39	-19.35
2	0.33359	10.06	25.91	25.34	35.97	35.40	59.36	49.36	-23.39	-13.96
3	2.26172	10.17	21.61	16.96	31.78	27.13	56.00	46.00	-24.22	-18.87
4	3.06641	10.21	22.37	17.43	32.58	27.64	56.00	46.00	-23.42	-18.36
5	8.23438	10.45	16.71	11.33	27.16	21.78	60.00	50.00	-32.84	-28.22
6	28.50000	11.20	25.42	20.55	36.62	31.75	60.00	50.00	-23.38	-18.25

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

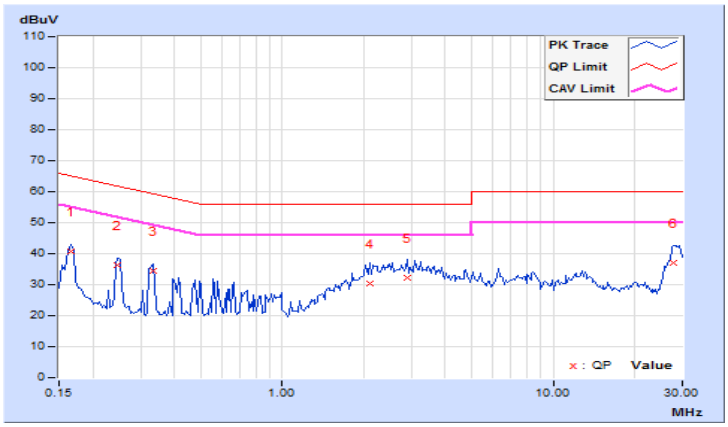


Channel	TX Channel 1		
Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	9.93	30.97	27.00	40.90	36.93	65.18	55.18	-24.28	-18.25
2	0.24766	9.94	26.37	25.42	36.31	35.36	61.84	51.84	-25.53	-16.48
3	0.33359	9.95	24.50	23.57	34.45	33.52	59.36	49.36	-24.91	-15.84
4	2.11719	10.04	20.48	15.46	30.52	25.50	56.00	46.00	-25.48	-20.50
5	2.90234	10.08	22.12	17.46	32.20	27.54	56.00	46.00	-23.80	-18.46
6	27.78125	10.95	26.12	21.35	37.07	32.30	60.00	50.00	-22.93	-17.70
7	23.31250	11.20	26.84	13.63	38.04	24.83	60.00	50.00	-21.96	-25.17

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

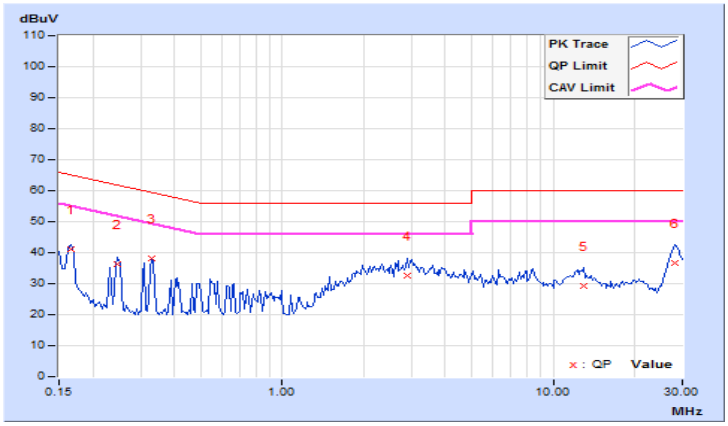


Channel	TX Channel 2		
Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.03	31.09	26.03	41.12	36.06	65.18	55.18	-24.06	-19.12
2	0.24766	10.05	26.21	24.64	36.26	34.69	61.84	51.84	-25.58	-17.15
3	**0.32969**	**10.06**	**28.01**	**26.02**	**38.07**	**36.08**	**59.46**	**49.46**	**-21.39**	**-13.38**
4	2.88281	10.20	22.45	17.79	32.65	27.99	56.00	46.00	-23.35	-18.01
5	13.00781	10.69	18.75	13.76	29.44	24.45	60.00	50.00	-30.56	-25.55
6	28.18750	11.20	25.64	20.72	36.84	31.92	60.00	50.00	-23.16	-18.08

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

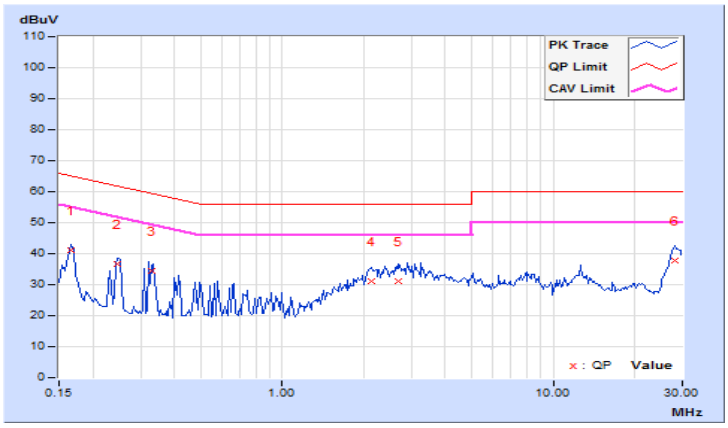


Channel	TX Channel 2		
Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	9.93	31.28	27.26	41.21	37.19	65.18	55.18	-23.97	-17.99
2	0.24766	9.94	26.67	25.64	36.61	35.58	61.84	51.84	-25.23	-16.26
3	0.32963	9.95	24.46	24.26	34.41	34.21	59.46	49.46	-25.05	-15.25
4	2.14063	10.05	21.12	16.02	31.17	26.07	56.00	46.00	-24.83	-19.93
5	2.67969	10.07	21.04	16.36	31.11	26.43	56.00	46.00	-24.89	-19.57
6	28.22266	10.96	26.73	21.88	37.69	32.84	60.00	50.00	-22.31	-17.16

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

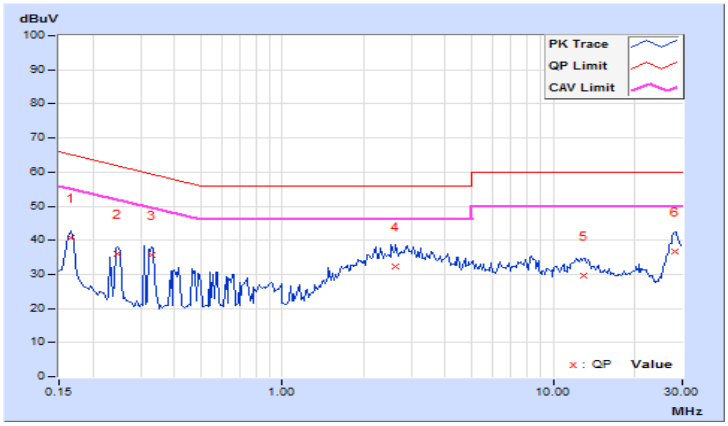


Channel	TX Channel 3		
Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.03	30.72	25.73	40.75	35.76	65.18	55.18	-24.43	-19.42
2	0.24766	10.05	26.05	24.54	36.10	34.59	61.84	51.84	-25.74	-17.25
3	0.32969	10.06	25.73	25.69	35.79	35.75	59.46	49.46	-23.67	-13.71
4	2.62891	10.19	21.99	17.30	32.18	27.49	56.00	46.00	-23.82	-18.51
5	12.96094	10.69	18.83	13.68	29.52	24.37	60.00	50.00	-30.48	-25.63
6	27.97656	11.20	25.47	20.72	36.67	31.92	60.00	50.00	-23.33	-18.08

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

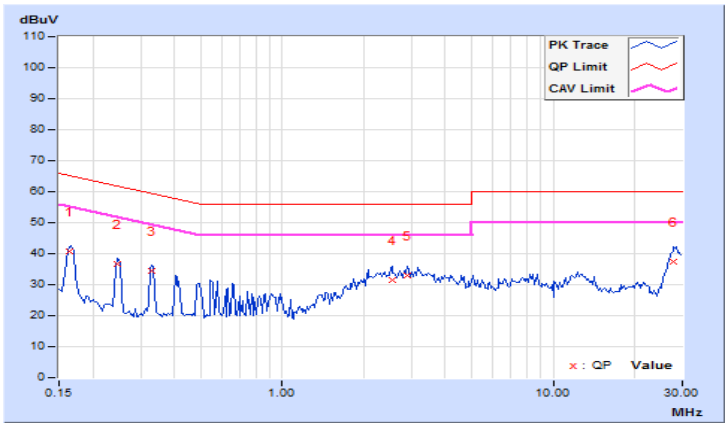


Channel	TX Channel 3		
Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16375	9.93	30.71	26.94	40.64	36.87	65.27	55.27	-24.63	-18.40
2	0.24766	9.94	26.73	25.68	36.67	35.62	61.84	51.84	-25.17	-16.22
3	0.32969	9.95	24.56	24.26	34.51	34.21	59.46	49.46	-24.95	-15.25
4	2.55078	10.06	21.53	17.77	31.59	27.83	56.00	46.00	-24.41	-18.17
5	2.89844	10.08	22.78	18.40	32.86	28.48	56.00	46.00	-23.14	-17.52
6	27.89453	10.95	26.34	21.52	37.29	32.47	60.00	50.00	-22.71	-17.53

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

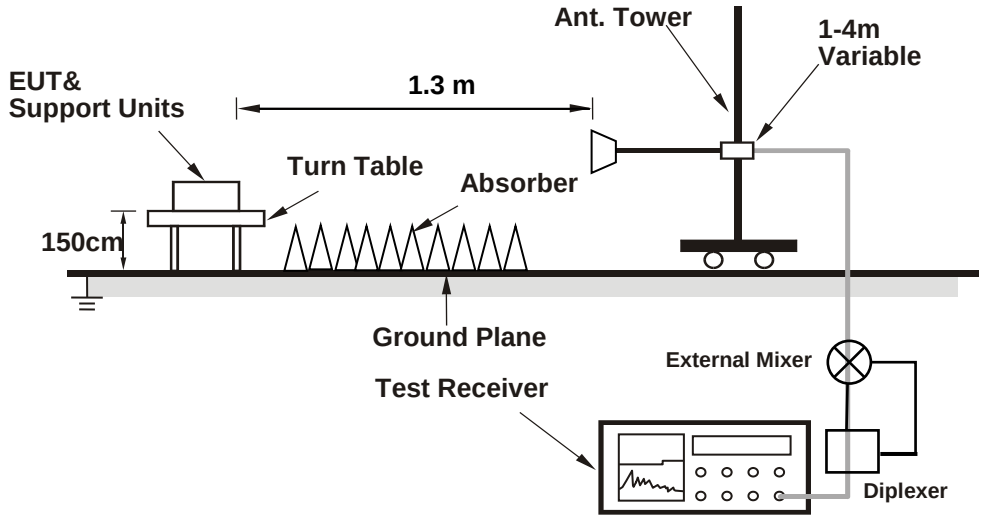


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

None: For reporting purposes only.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

The spectrum analyzer and external mixer are set up to measure the radiated output of the transmitter.

4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

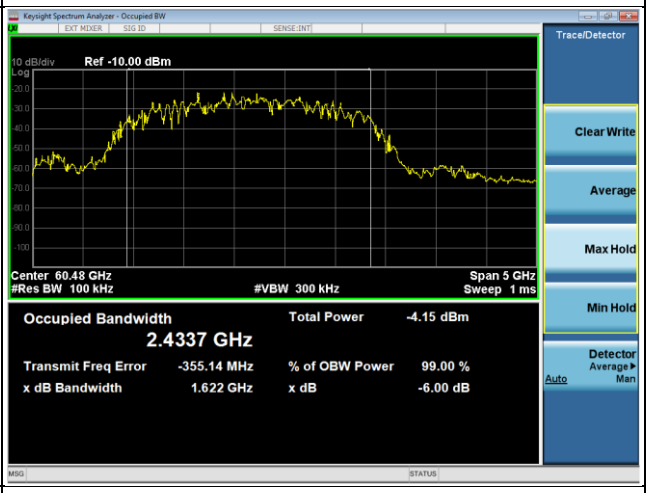
4.3.7 Test Result

Channel	Frequency (GHz)	6dB Bandwidth (GHz)
1	58.32	1.662
2	60.48	1.622
3	62.64	1.686

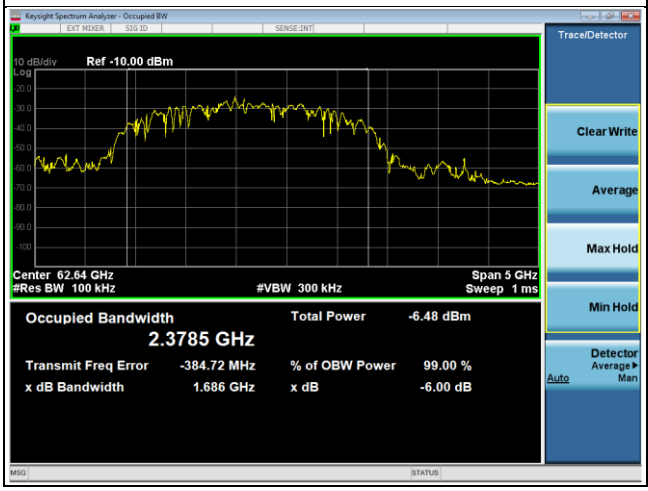
Spectrum Plot of Worst Value

CH1

CH2



CH3



4.4 Output Power Measurement

4.4.1 Limits of Output Power Measurement

15.255 (c) & (e)

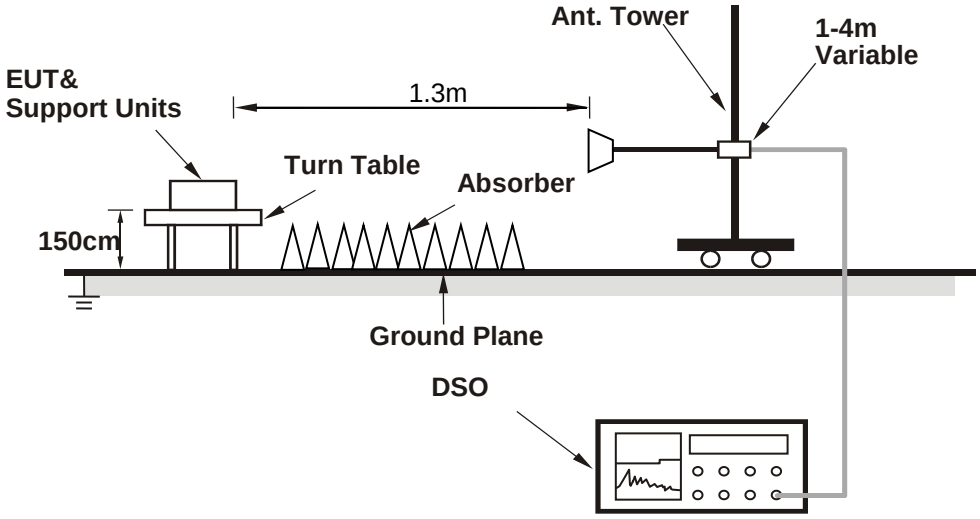
Output Power (EIRP)				
Applicaple	**Type**		**Peak Power**	**Average Power**
V	Within the 57-71 GHz band (Other than fixed field disturbance sensors and short-range devices)	Other than fixed point to point transmitters located outdoors	43dBm	40dBm
		Fixed point-to-point transmitters located outdoors	85dBm (*Note 1)	82dBm (*Note 2)
	Fixed field disturbance sensors (61-61.5GHz)	Occupy 500 MHz or less of bandwidth	43dBm (*Note 3)	40dBm (*Note 3)
	Fixed field disturbance sensors	Other than occupy 500 MHz or less of bandwidth and that are contained wholly within the frequency band 61.0-61.5 GHz	10dBm	-
	short-range devices for interactive motion sensing	-		

Note:
1. The average power of any emission shall not exceed 82 dBm, and shall be reduced by 2 dB for every dB that the antenna gain is less than 51 dBi.
2. The peak power of any emission shall not exceed 85 dBm, and shall be reduced by 2 dB for every dB that the antenna gain is less than 51 dBi.
3. In addition, the average power of any emission outside of the 61.0-61.5 GHz band, measured during the transmit interval, but still within the 57-71 GHz band, shall not exceed 10 dBm,and the peak power of any emission shall not exceed 13 dBm.

Peak Output Power (Conducted Power)			
Applicaple	**Type**	**6dB Bandwidth**	**Maximum Conducted Power**
	Fixed field disturbance sensors (Exclude 61-61.5GHz)	-	≦ 0.1mW
V	Other	Other	500mW
V		Less than 100MHz	500mW x (B/100)

Note:
1. B is 6dB Bandwidth (measured with a 100kHz resolution bandwidth)
2. Peak transmitter output power shall be measured with an RF detector that has a detection bandwidth that encompasses the 57-64 GHz band and the has a video bandwidth of at least 10 MHz, or using an equivalent measurement method.
3. For purposes of demonstrating complained with this paragraph (e), corrections to the transmitter output power may be made due to the antenna and circuit loss.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

a. Place the EUT in a continuous transmission mode.
b. For radiated emission measurements, attach a test receive antenna for the fundamental frequency band to the RF input of an RF detector or a downconverter with an RF detector at the output.
c. Connect the video output of the detector to the 50 ohm input of the DSO.
d. Place the test receive antenna in the main beam of the EUT at a distance which will provide a signal within the operating range of the RF detector.
e. Set the sampling rate of the DSO to the required value. Adjust the memory depth, the triggering and the sweep speed to obtain a display which is representative of the signal considering the type of modulation.
f. For radiated emission measurements, calculate the distance to the far field boundary of the fundamental emission using following equation

$$d_{farfield} = \frac{2D^2}{\lambda}$$

where:

D = largest dimension of the transmit antenna

λ = wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
62.64	0.055	0.00479	1.263

g. Perform radiated emission measurements to keep maximize the received signal from the EUT in the far field.
h. Record the average and peak from the DSO and the measurement distance.
i. Disconnect the EUT fromthe RF input port of the instrumentation system.
j. Connect a mm-wave source to the RF input port of the instrumentation system via a waveguide variable attenuator. The mm-wave source is unmodulated.
k. Using substitution measurement.
l. Measure and note the power.
m. For conducted power measurements, calculate the conducted power using following equation

$P_{cond} = EIRP\text{-}G_{dBi}$

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

For Peak Power

Channel	Frequency (GHz)	Transmitt Antenna	S.G Output Value (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Pass /Fail
1	58.32	21.4	19.3	40.7	43	Pass
2	60.48	21.4	19.7	41.1	43	Pass
3	62.64	21.4	18.1	39.5	43	Pass

Channel	Frequency (GHz)	EIRP (dBm)	Max. Array Gain (dBi)	Conducted Output Power (dBm)	Conducted Output Power (mW)	Conducted Output Power limit (mW)	Pass /Fail
1	58.32	40.7	23.26	17.44	55.5	500	Pass
2	60.48	41.1	24.49	16.61	45.8	500	Pass
3	62.64	39.5	22.7	16.8	47.9	500	Pass

Note:

1. The EIRP was evaluated on vertical and horizontal polarization, the worst case is Vertical polarization.
2. The 6dB bandwidth is less than 100MHz, therefore conducted power limit = 500mW x (6dB bandwidth /100).

For Average Power

Channel	Frequency (GHz)	Transmitt Antenna	S.G Output Value (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Pass /Fail
1	58.32	21.4	18.4	39.8	40	Pass
2	60.48	21.4	18.5	39.9	40	Pass
3	62.64	21.4	17.0	38.4	40	Pass

Note:

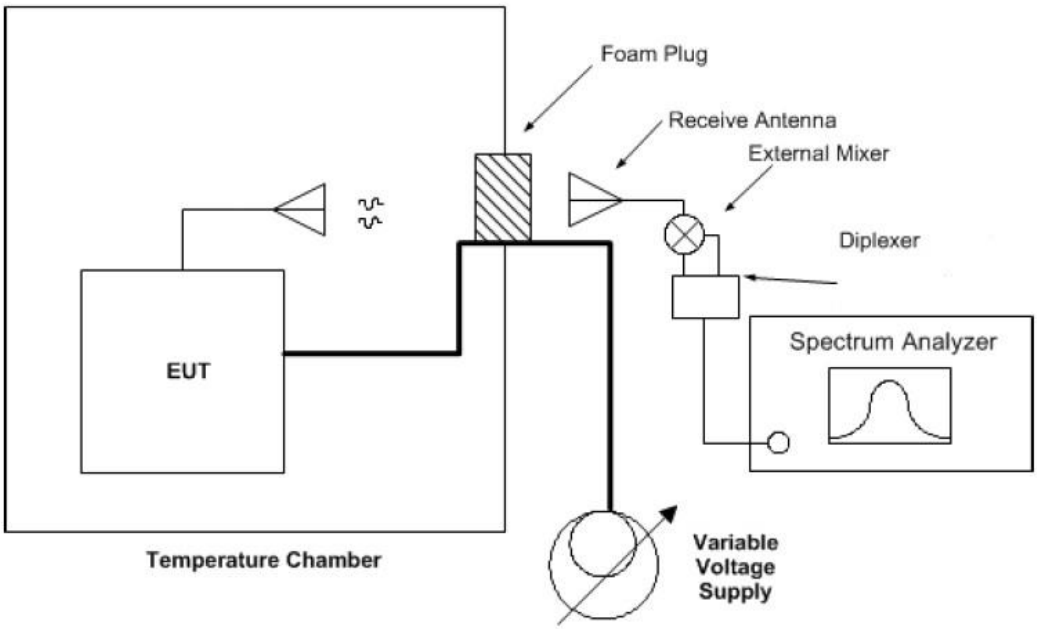
1. The EIRP was evaluated on vertical and horizontal polarization, the worst case is Vertical polarization.

4.5 Frequency Stability Measurement

4.5.1 Limits of Conducted Out of Band Emission Measurement

15.255(f) Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range -20 to +50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

a. Arrange EUT and test equipment as above setup configuration.
b. With the EUT at ambient temperature and voltage source set to the EUT nominal operating voltage (100%), record the spectrum mask of the EUT emission on the spectrum analyzer.
c. Vary EUT power supply between 85% and 115% of nominal, and record the frequency excursion of the EUT emission mask.
d. Set the power supply to 100% nominal setting, and raise EUT operating temperature to 50 °C. Record the frequency excursion of the EUT emission mask.
e. Repeat step d) at each 10 °C increment down to −20 °C

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 60480 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
60	55	60480.0693	PASS	60480.114	PASS	60480.0728	PASS	60480.0804	PASS
50	55	60480.0558	PASS	60480.0421	PASS	60480.0369	PASS	60480.067	PASS
40	55	60480.1819	PASS	60480.1808	PASS	60480.2121	PASS	60480.2272	PASS
30	55	60479.7441	PASS	60479.7288	PASS	60479.7073	PASS	60479.698	PASS
20	55	60480.2152	PASS	60480.2104	PASS	60480.2301	PASS	60480.197	PASS
10	55	60479.9333	PASS	60479.9046	PASS	60479.9077	PASS	60479.9016	PASS
0	55	60480.0626	PASS	60480.0463	PASS	60480.0275	PASS	60480.0568	PASS
-10	55	60479.7644	PASS	60479.7475	PASS	60479.7713	PASS	60479.7464	PASS
-20	55	60480.2056	PASS	60480.2009	PASS	60480.2185	PASS	60480.1971	PASS
-30	55	60479.7605	PASS	60479.7246	PASS	60479.7422	PASS	60479.7745	PASS
-40	55	60479.9201	PASS	60479.9118	PASS	60479.9119	PASS	60479.876	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 60480 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	63.25	60480.2034	PASS	60480.2091	PASS	60480.2244	PASS	60480.1906	PASS
	55	60480.2152	PASS	60480.2104	PASS	60480.2301	PASS	60480.197	PASS
	46.75	60480.2066	PASS	60480.2135	PASS	60480.2305	PASS	60480.2047	PASS

5 Pictures of Test Arrangements

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

Appendix – Information of 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 FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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Web Site: www.bureauveritas-adt.com

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

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