FCC Test Report

Report No.:	RF190702C02-4
FCC ID:	SWX-AF60
Test Model:	AF60
Received Date:	July 02, 2019
Test Date:	July 30 to Aug. 12, 2019
Issued Date:	Aug. 20, 2019
Applicant:	Ubiquiti Inc.
Address:	685 Third Avenue, 27th Floor New York, New York 10017 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

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Release Control Record

Issue No.	Description	Date Issued
RF190702C02-4	Original release.	Aug. 20, 2019

1 Certificate of Conformity

Product:	airFiber 60
Brand:	UBIQUITI
Test Model:	AF60
Sample Status:	ENGINEERING SAMPLE
Applicant:	Ubiquiti Inc.
Test Date:	July 30 to Aug. 12, 2019
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 : Phoenix Huang / Specialist , **Date:** Aug. 20, 2019

Approved by : May Chen / Manager , **Date:** Aug. 20, 2019

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 -14.94dB at 0.16953MHz.
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 -1.1dB at 62.47MHz.
15.255(f)	Frequency Stability	Pass	Meet the requirement of limit.

Note:
Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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	1.8 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.1 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.2 dB
	40GHz ~ 200GHz	5.4 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	airFiber 60
Brand	UBIQUITI
Test Model	AF60
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	24Vdc from PoE adapter
Modulation Type	π/2-BPSK, π/2-QPSK, π/2-16QAM
Modulation Technology	OFDM
Transfer Rate	4620Mb/s
Operating Frequency	57 ~ 66 GHz
Output Power (EIRP)	58.32 GHz: 55.66 dBm 60.48 GHz: 55.62 dBm 62.64 GHz: 55.68 dBm 64.80 GHz: 55.62 dBm
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	PoE adapter x 1
Data Cable Supplied	NA

Note:

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

With dish Antenna Gain (dBi)	Frequency Range (GHz)	Connector Type
38	57 ~ 66	none

2. The EUT must be supplied with a PoE adapter as following table:

Brand	Model No.	Spec.
Ubiquiti Networks. Inc.	GP-A240-050G	Input: 100-240Vac, 50/60Hz, MAX 0.3A Output: 24Vdc, 0.5A

3. 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

4 channels are provided for EUT

Channel	Frequency (GHz)	Channel	Frequency (GHz)	Channel	Frequency (GHz)	Channel	Frequency (GHz)
1	58.32	2	60.48	3	62.64	4	64.80

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, 4	3	OFDM	π/2-BPSK	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, 4	1, 2, 3, 4	OFDM	π/2-BPSK	27.5Mbps

Output Power 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, 4	1, 2, 3, 4	OFDM	π/2-BPSK	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, 4	3	OFDM	π/2-BPSK	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, 4	1, 2, 3, 4	OFDM	π/2-BPSK	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, 4	1, 2, 3, 4	OFDM	π/2-BPSK	27.5Mbps

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	23 deg. C, 76 %RH	120Vac, 60Hz	Andy Ho
BW	25 deg. C, 60 %RH	120Vac, 60Hz	Weiwei Liao
OP	25 deg. C, 60 %RH	120Vac, 60Hz	Weiwei Liao
FS	25 deg. C, 60 %RH	120Vac, 60Hz	Weiwei Liao
RE<1G	23 deg. C, 68 %RH	120Vac, 60Hz	Andy Ho
RE≥1G	23 deg. C, 68 %RH, 25 deg. C, 67 %RH, 23 deg. C, 62 %RH	120Vac, 60Hz	Andy Ho, Weiwei Liao

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	E5430	HYV4VY1	FCC DoC	Provided by Lab

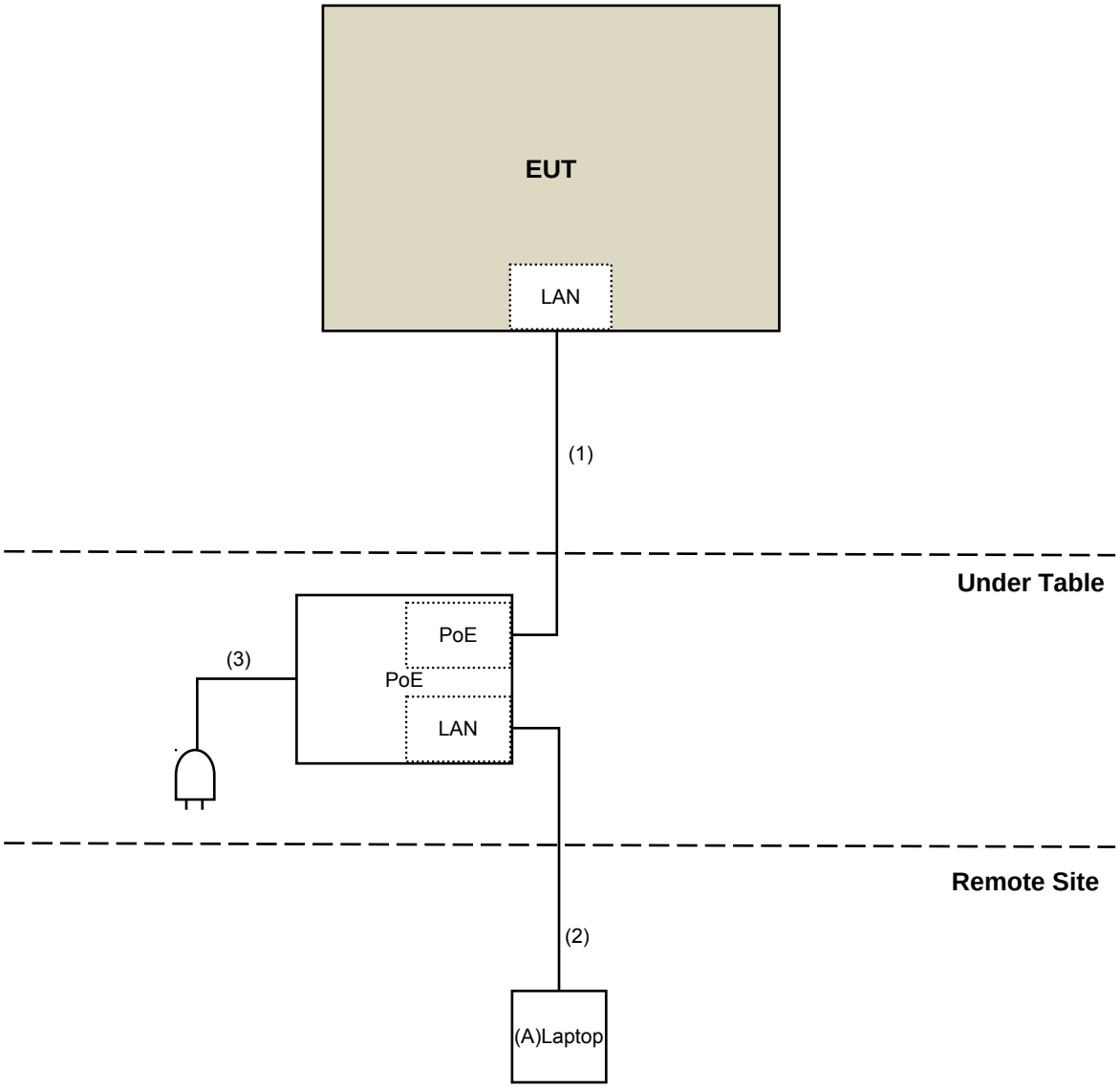
Note:

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

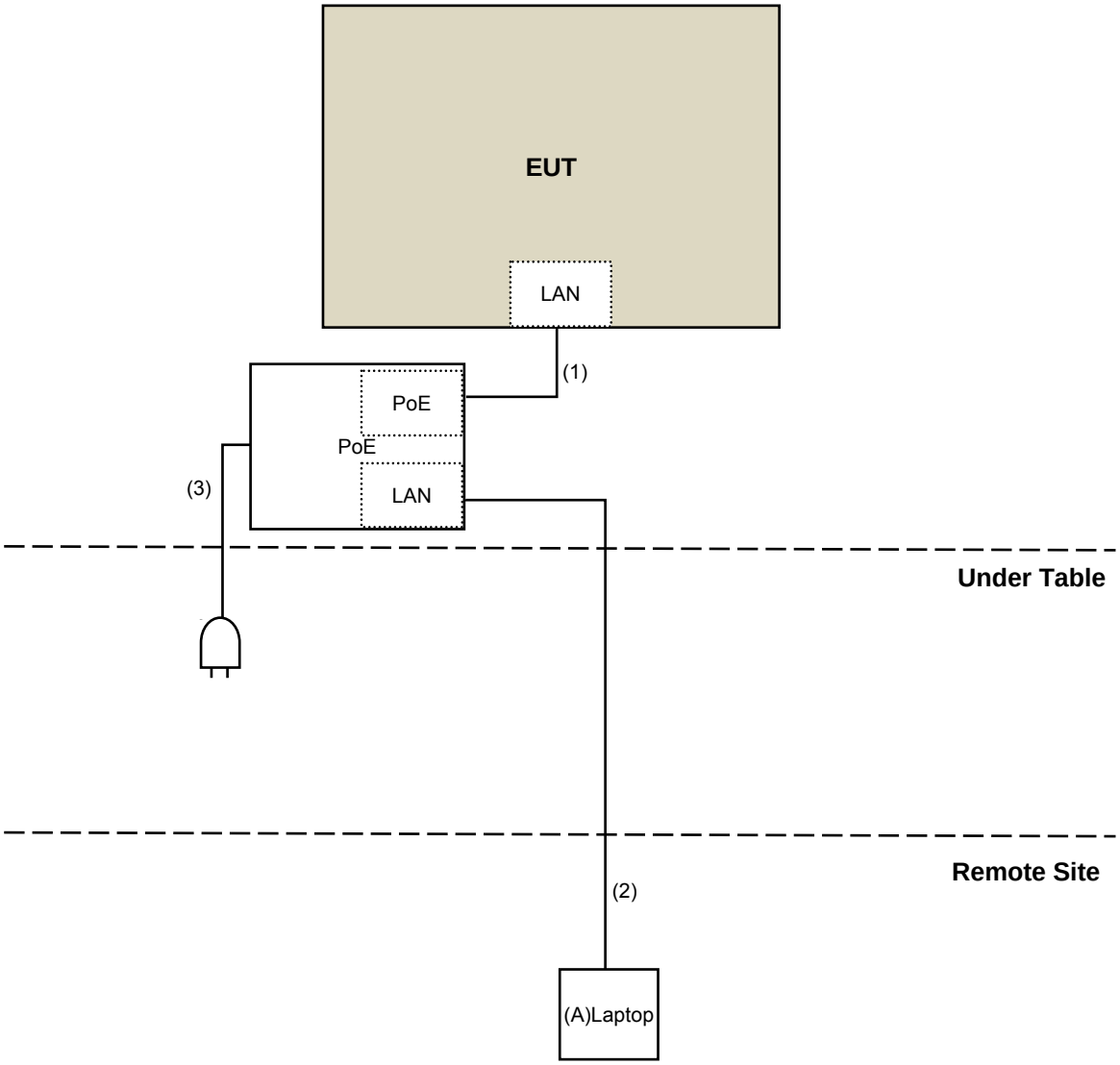
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	3	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	AC Cable	1	0.6	No	0	Supplied by client

3.3.1 Configuration of System under Test

For Power Line 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

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

For Below 40GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 17, 2019	July 16, 2020
Pre-Amplifier EMCI	EMC001340	980142	Jan. 25, 2019	Jan. 24, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	Apr. 30, 2019	Apr. 29, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-3-1	Mar. 18, 2019	Mar. 17, 2020
RF Cable	8D	966-3-2	Mar. 18, 2019	Mar. 17, 2020
RF Cable	8D	966-3-3	Mar. 18, 2019	Mar. 17, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC104-SM-SM-1200	160922	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC104-SM-SM-2000	180601	June 10, 2019	June 09, 2020
RF Cable	EMC104-SM-SM-6000	180602	June 10, 2019	June 09, 2020
Spectrum Analyzer Keysight	N9030A	MY54490679	July 17, 2019	July 16, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
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
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 09, 2019	Jan. 08, 2020
True RMS Clamp Meter FLUKE	325	31130711WS	May 21, 2019	May 20, 2020

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 966 Chamber No. 3.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Aug. 06 to 12, 2019

For Above 40GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	July 24, 2019	July 23, 2020
*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	July 12, 2019	July 11, 2020
*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
*Millimeter-Wave Signal Generator Frequency Extension Module (75~110 GHz) Keysight	E8257DV10	US53250009	Oct. 17, 2017	Oct. 16, 2019
PSG analog signal generator Keysight	E8257D	MY53401987	June 21, 2019	June 20, 2020
Antenna Tower & Turn Table CT	NA	NA	NA	NA
*Preselected Millimeter Mixer (50~75GHz) Agilent	11974V	MY30012030	Oct. 17, 2017	Oct. 16, 2019
*Millimeter wave Pre_Amplifier (57~66GHz) Space Labs	SL629-29-5W	1F29	Oct. 17, 2017	Oct. 16, 2019
*SWV-1 waveguide (50~75GHz) Space Labs	WV-1 waveguide	SWV-1_01	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 Test Date: July 30 to Aug. 02, 2019

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 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.

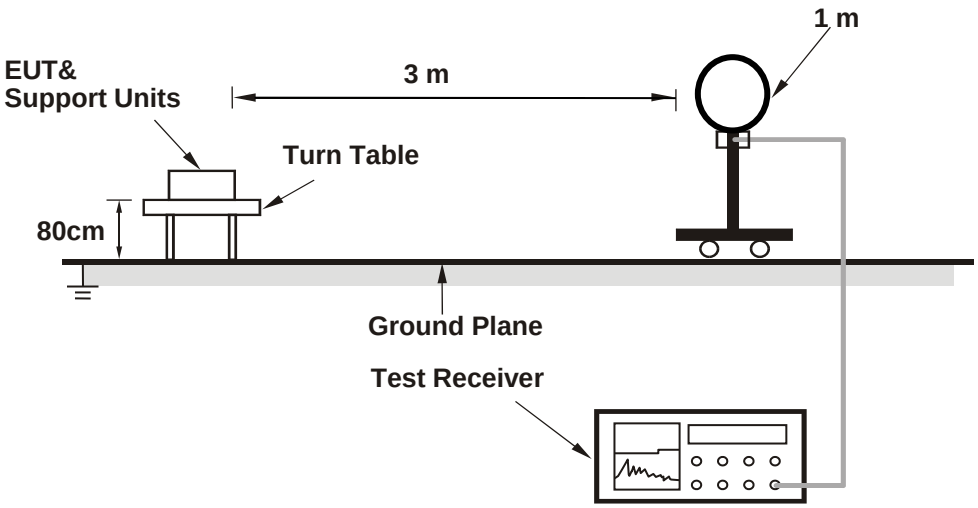
l. Repeat the preceding sequence for every emission observed in the frequency band under investigation.

4.1.4 Deviation from Test Standard

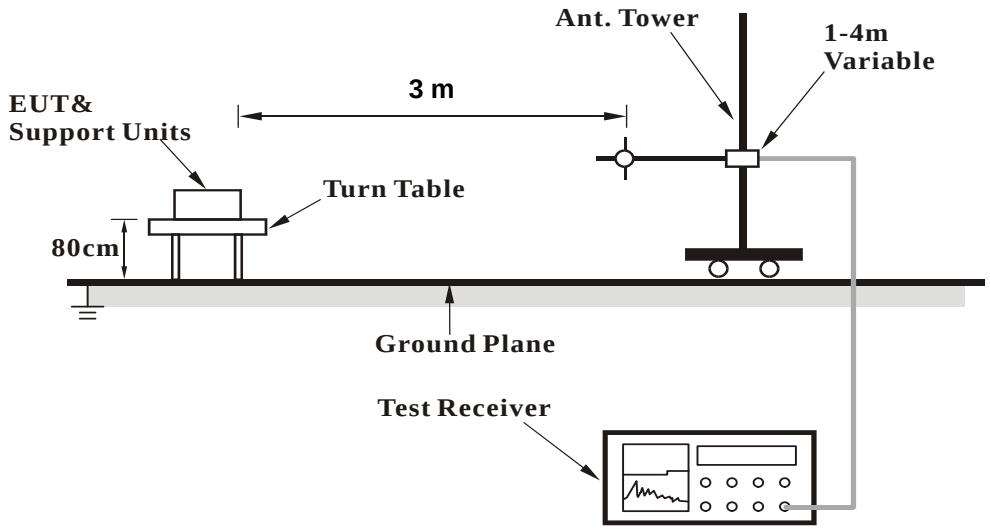
No deviation.

4.1.5 Test Setup

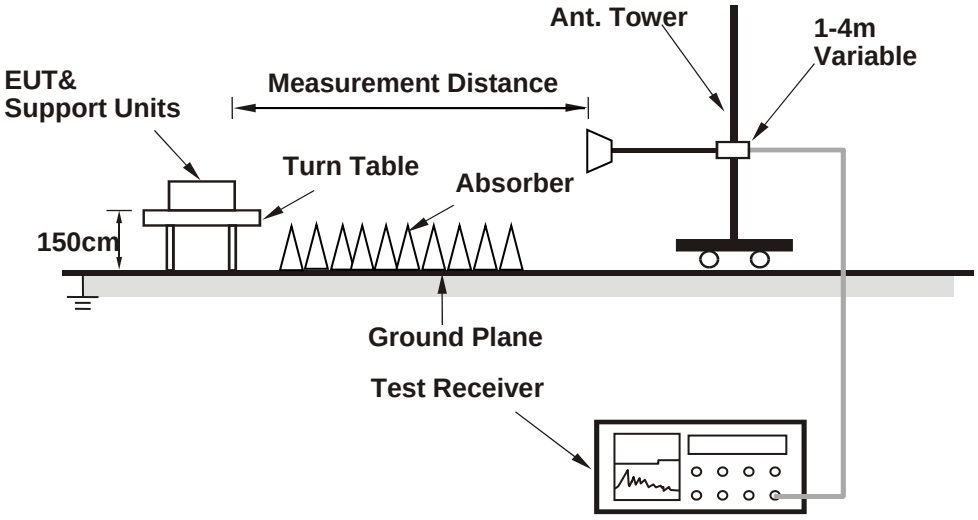
For Radiated emission below 30MHz



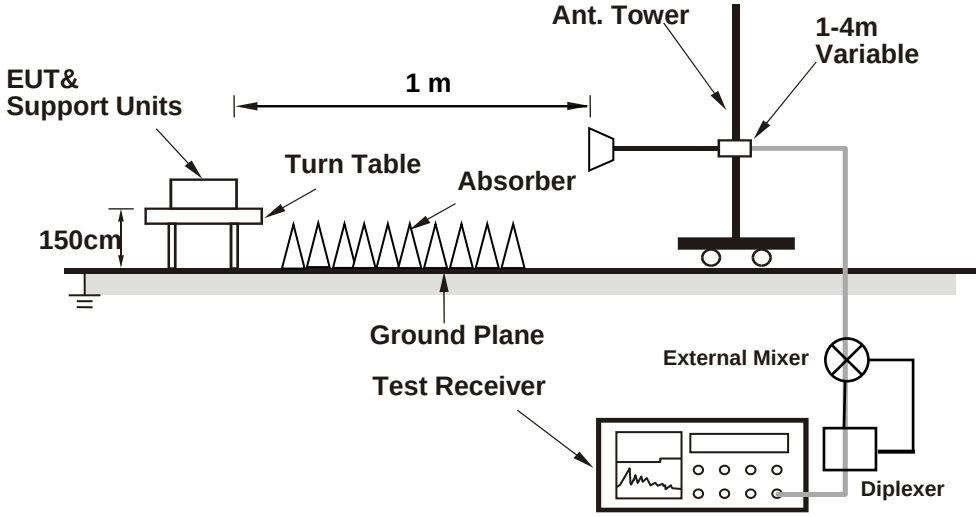
For Radiated emission 30MHz to 1GHz



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 under transmission condition continuously on specific status.

4.1.7 Test Results

Above 1GHz Data:

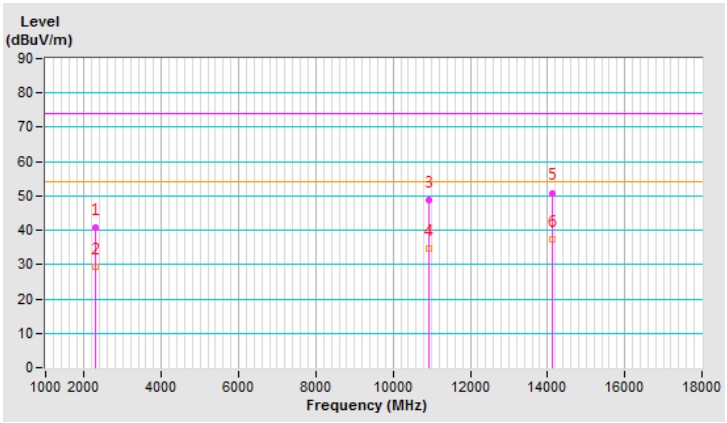
For 1~18 GHz

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	2295.35	40.9 PK	74.0	-33.1	2.00 H	0	42.7	-1.8
2	2295.35	29.4 AV	54.0	-24.6	2.00 H	0	31.2	-1.8
3	10930.07	48.9 PK	74.0	-25.1	1.50 H	179	35.7	13.2
4	10930.07	34.6 AV	54.0	-19.4	1.50 H	179	21.4	13.2
5	14121.22	50.9 PK	74.0	-23.1	2.50 H	108	35.3	15.6
6	14121.22	37.2 AV	54.0	-16.8	2.50 H	108	21.6	15.6

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

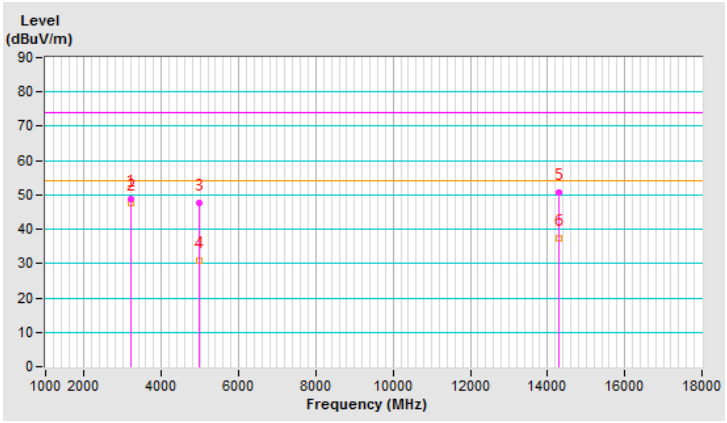


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

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	3215.05	48.7 PK	74.0	-25.3	1.00 V	358	49.5	-0.8
2	3215.05	47.7 AV	54.0	-6.3	1.00 V	358	48.5	-0.8
3	4990.82	47.7 PK	74.0	-26.3	1.00 V	4	45.0	2.7
4	4990.82	30.8 AV	54.0	-23.2	1.00 V	4	28.1	2.7
5	14290.81	50.8 PK	74.0	-23.2	2.00 V	245	34.7	16.1
6	14290.81	37.4 AV	54.0	-16.6	2.00 V	245	21.3	16.1

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

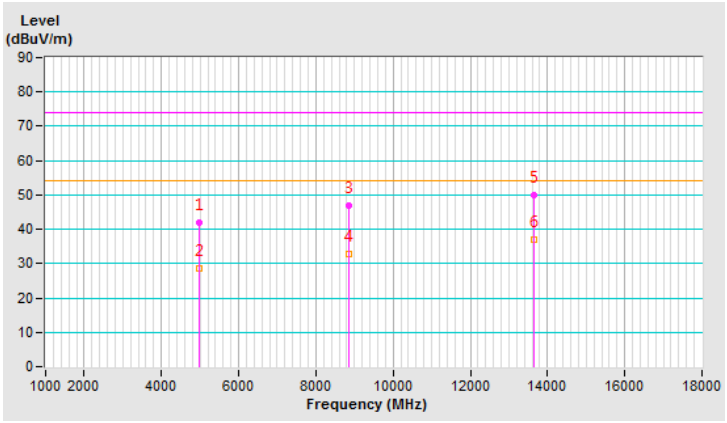


CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

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	4985.16	41.8 PK	74.0	-32.2	1.50 H	8	39.2	2.6
2	4985.16	28.4 AV	54.0	-25.6	1.50 H	8	25.8	2.6
3	8839.32	46.9 PK	74.0	-27.1	1.50 H	243	37.0	9.9
4	8839.32	32.7 AV	54.0	-21.3	1.50 H	243	22.8	9.9
5	13643.62	49.8 PK	74.0	-24.2	1.50 H	260	34.8	15.0
6	13643.62	37.0 AV	54.0	-17.0	1.50 H	260	22.0	15.0

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

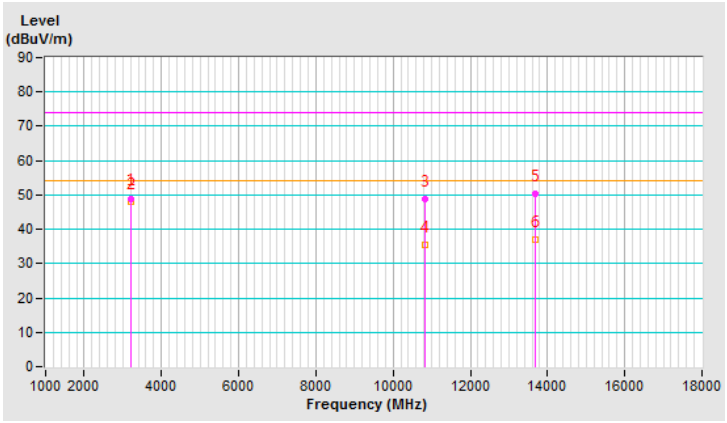


CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

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	3218.40	49.0 PK	74.0	-25.0	1.00 V	354	49.8	-0.8
2	3218.40	47.9 AV	54.0	-6.1	1.00 V	354	48.7	-0.8
3	10837.13	48.7 PK	74.0	-25.3	1.00 V	207	35.5	13.2
4	10837.13	35.5 AV	54.0	-18.5	1.00 V	207	22.3	13.2
5	13693.71	50.2 PK	74.0	-23.8	1.00 V	340	35.0	15.2
6	13693.71	37.0 AV	54.0	-17.0	1.00 V	340	21.8	15.2

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 other emission levels were very low against the limit.

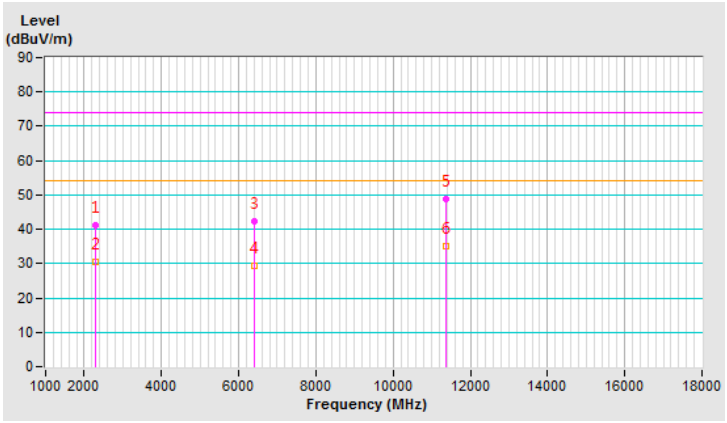


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

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	2290.97	41.1 PK	74.0	-32.9	1.49 H	20	42.9	-1.8
2	2290.97	30.6 AV	54.0	-23.4	1.49 H	20	32.4	-1.8
3	6417.43	42.3 PK	74.0	-31.7	2.00 H	342	36.7	5.6
4	6417.43	29.4 AV	54.0	-24.6	2.00 H	342	23.8	5.6
5	11357.69	48.9 PK	74.0	-25.1	1.00 H	236	35.5	13.4
6	11357.69	35.0 AV	54.0	-19.0	1.00 H	236	21.6	13.4

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 other emission levels were very low against the limit.

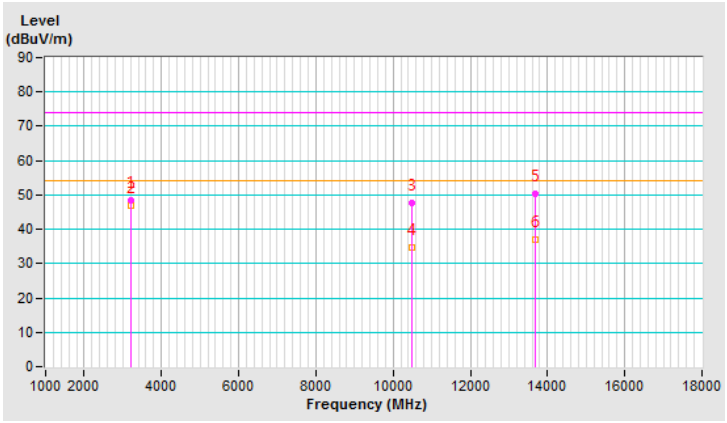


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

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	3212.70	48.3 PK	74.0	-25.7	1.00 V	351	49.0	-0.7
2	3212.70	46.9 AV	54.0	-7.1	1.00 V	351	47.6	-0.7
3	10471.88	47.7 PK	74.0	-26.3	1.50 V	93	35.2	12.5
4	10471.88	34.7 AV	54.0	-19.3	1.50 V	93	22.2	12.5
5	13695.25	50.2 PK	74.0	-23.8	1.00 V	340	35.0	15.2
6	13695.25	37.1 AV	54.0	-16.9	1.00 V	340	21.9	15.2

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 other emission levels were very low against the limit.

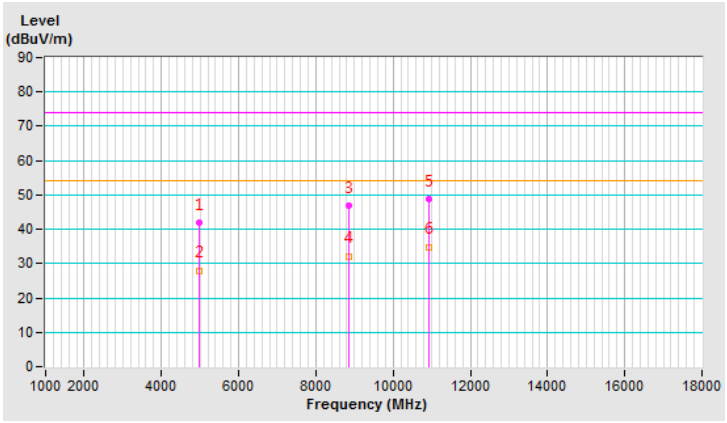


CHANNEL	TX Channel 4	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

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	4983.40	41.8 PK	74.0	-32.2	1.50 H	8	39.2	2.6
2	4983.40	28.0 AV	54.0	-26.0	1.50 H	8	25.4	2.6
3	8840.45	46.9 PK	74.0	-27.1	1.50 H	243	37.0	9.9
4	8840.45	32.2 AV	54.0	-21.8	1.50 H	243	22.3	9.9
5	10930.29	48.9 PK	74.0	-25.1	1.50 H	179	35.7	13.2
6	10930.29	34.9 AV	54.0	-19.1	1.50 H	179	21.7	13.2

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 other emission levels were very low against the limit.

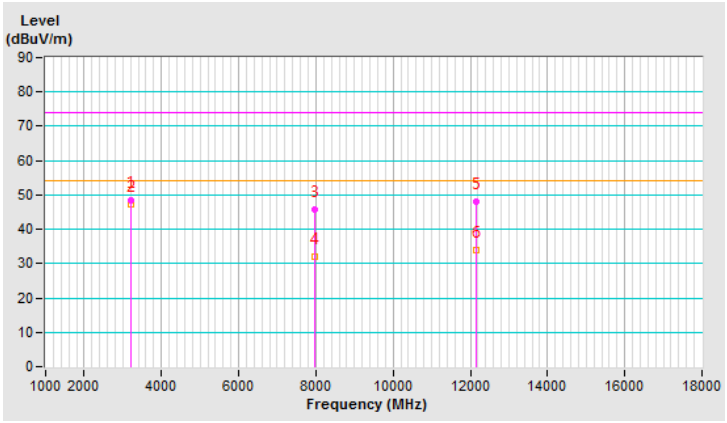


CHANNEL	TX Channel 4	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 18GHz		

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	3214.66	48.5 PK	74.0	-25.5	1.00 V	355	49.3	-0.8
2	3214.66	47.2 AV	54.0	-6.8	1.00 V	355	48.0	-0.8
3	7967.35	45.7 PK	74.0	-28.3	1.50 V	13	36.6	9.1
4	7967.35	31.9 AV	54.0	-22.1	1.50 V	13	22.8	9.1
5	12154.34	48.0 PK	74.0	-26.0	1.00 V	13	35.5	12.5
6	12154.34	34.0 AV	54.0	-20.0	1.00 V	13	21.5	12.5

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 other emission levels were very low against the limit.



For 18~40 GHz

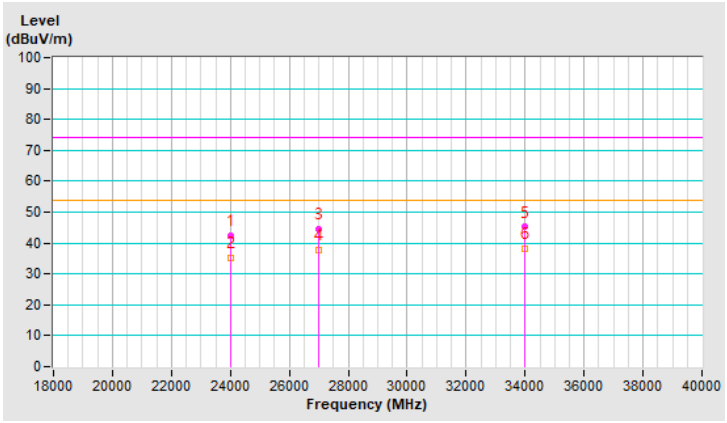
CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

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	24002.00	42.5 PK	74.0	-31.5	1.15 H	110	60.2	-17.7
2	24002.00	35.1 AV	54.0	-18.9	1.15 H	110	52.8	-17.7
3	27003.00	44.5 PK	74.0	-29.5	1.26 H	245	60.7	-16.2
4	27003.00	37.8 AV	54.0	-16.2	1.26 H	245	54.0	-16.2
5	34003.00	45.2 PK	74.0	-28.8	1.59 H	115	61.7	-16.5
6	34003.00	38.2 AV	54.0	-15.8	1.59 H	115	54.7	-16.5

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 other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



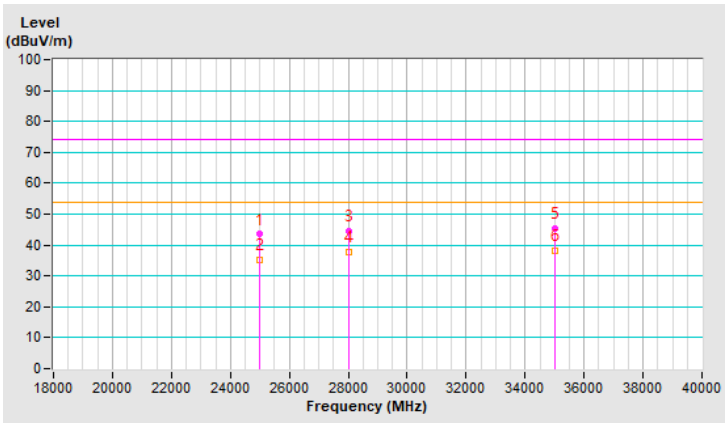
CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

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	25002.00	43.5 PK	74.0	-30.5	1.25 V	100	60.3	-16.8
2	25002.00	35.2 AV	54.0	-18.8	1.25 V	100	52.0	-16.8
3	28003.00	44.6 PK	74.0	-29.4	1.36 V	255	61.9	-17.3
4	28003.00	37.9 AV	54.0	-16.1	1.36 V	255	55.2	-17.3
5	35003.00	45.3 PK	74.0	-28.7	1.69 V	125	62.7	-17.4
6	35003.00	38.3 AV	54.0	-15.7	1.69 V	125	55.7	-17.4

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 other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



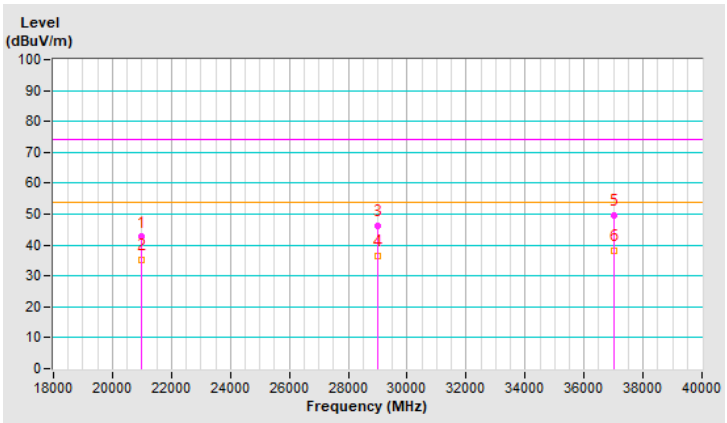
CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

ANTENNA POLARITY: 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	21005.00	42.6 PK	74.0	-31.4	1.22 H	100	61.6	-19.0
2	21005.00	35.2 AV	54.0	-18.8	1.22 H	100	54.2	-19.0
3	29003.00	46.3 PK	74.0	-27.7	1.68 H	12	63.9	-17.6
4	29003.00	36.6 AV	54.0	-17.4	1.68 H	12	54.2	-17.6
5	37003.00	49.5 PK	74.0	-24.5	1.66 H	200	65.0	-15.5
6	37003.00	38.3 AV	54.0	-15.7	1.66 H	200	53.8	-15.5

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 other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



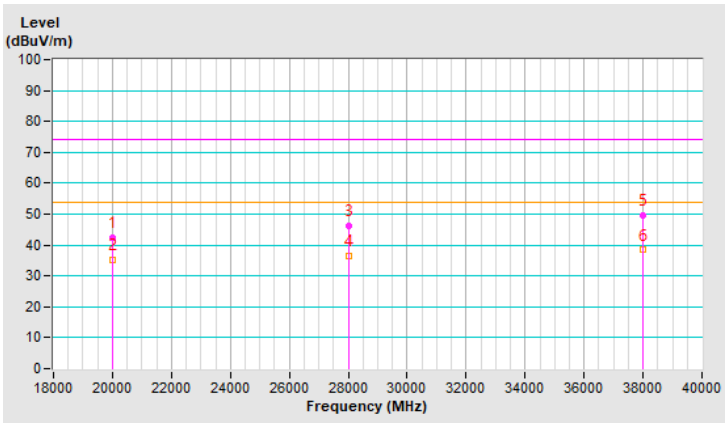
CHANNEL	TX Channel 2	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

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	20005.00	42.5 PK	74.0	-31.5	1.12 V	90	62.6	-20.1
2	20005.00	35.1 AV	54.0	-18.9	1.12 V	90	55.2	-20.1
3	28003.00	46.2 PK	74.0	-27.8	1.58 V	11	63.5	-17.3
4	28003.00	36.5 AV	54.0	-17.5	1.58 V	11	53.8	-17.3
5	38003.00	49.6 PK	74.0	-24.4	1.76 V	210	62.8	-13.2
6	38003.00	38.4 AV	54.0	-15.6	1.76 V	210	51.6	-13.2

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 other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



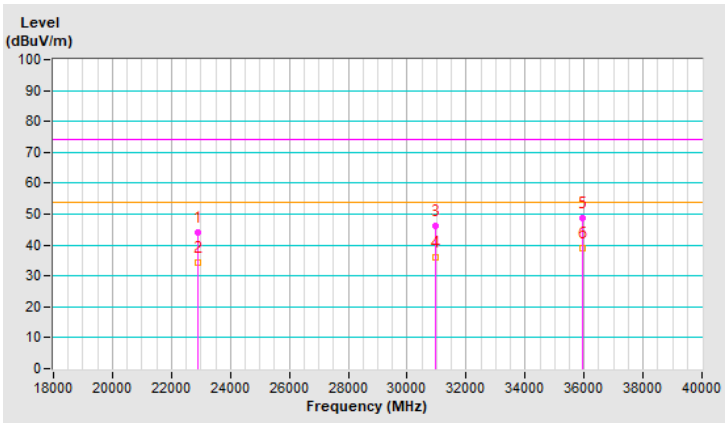
CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

ANTENNA POLARITY: 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	22908.00	44.1 PK	74.0	-29.9	1.13 H	299	61.9	-17.8
2	22908.00	34.2 AV	54.0	-19.8	1.13 H	290	52.0	-17.8
3	30952.00	46.2 PK	74.0	-27.8	1.97 H	210	62.9	-16.7
4	30952.00	36.1 AV	54.0	-17.9	1.97 H	210	52.8	-16.7
5	35953.00	48.9 PK	74.0	-25.1	2.01 H	115	65.1	-16.2
6	35953.00	39.1 AV	54.0	-14.9	2.01 H	115	55.3	-16.2

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 other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



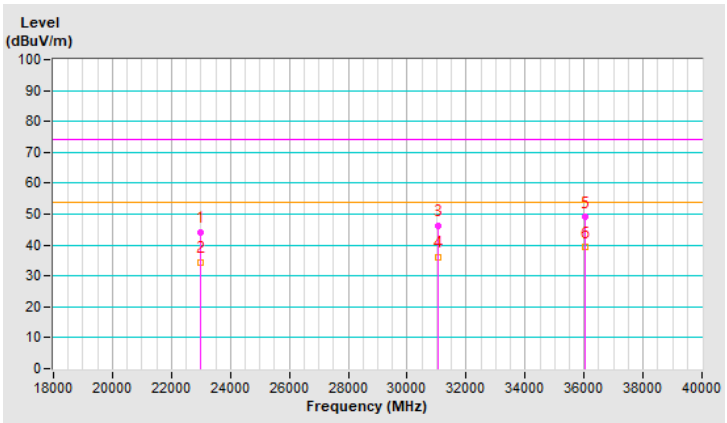
CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

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	23008.00	44.2 PK	74.0	-29.8	1.23 V	300	62.2	-18.0
2	23008.00	34.3 AV	54.0	-19.7	1.23 V	300	52.3	-18.0
3	31052.00	46.3 PK	74.0	-27.7	1.98 V	211	63.4	-17.1
4	31052.00	36.2 AV	54.0	-17.8	1.98 V	211	53.3	-17.1
5	36053.00	49.0 PK	74.0	-25.0	2.11 V	125	65.2	-16.2
6	36053.00	39.2 AV	54.0	-14.8	2.11 V	125	55.4	-16.2

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 other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



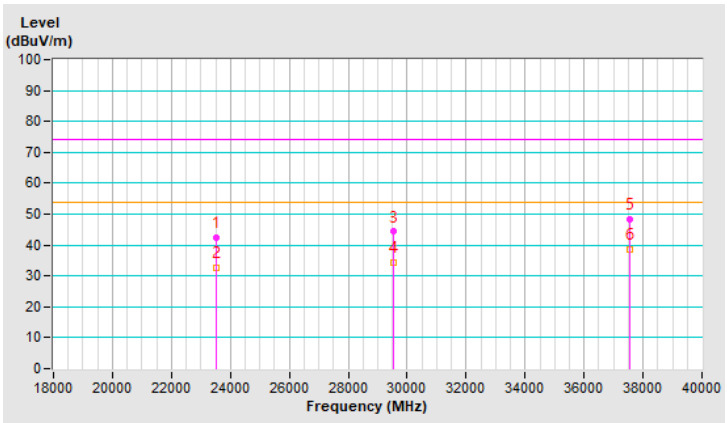
CHANNEL	TX Channel 4	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

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	23500.00	42.3 PK	74.0	-31.7	1.05 H	32	60.7	-18.4
2	23500.00	32.6 AV	54.0	-21.4	1.05 H	32	51.0	-18.4
3	29530.00	44.3 PK	74.0	-29.7	1.66 H	211	61.4	-17.1
4	29530.00	34.2 AV	54.0	-19.8	1.66 H	211	51.3	-17.1
5	37560.00	48.3 PK	74.0	-25.7	1.00 H	21	63.4	-15.1
6	37560.00	38.6 AV	54.0	-15.4	1.00 H	21	53.7	-15.1

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



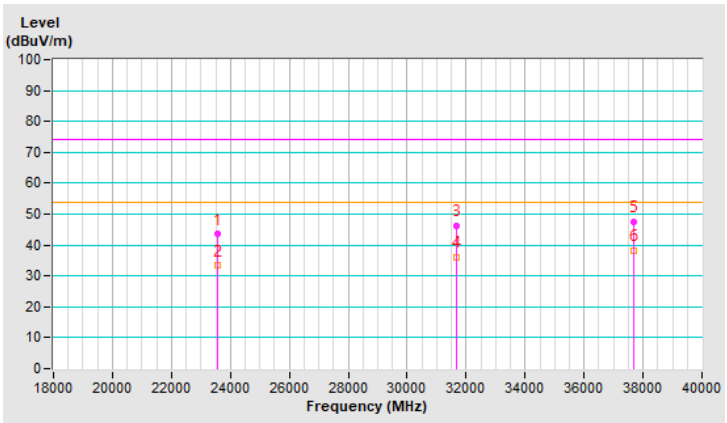
CHANNEL	TX Channel 4	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	18GHz ~ 40GHz		

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	23562.00	43.5 PK	74.0	-30.5	1.20 V	211	61.8	-18.3
2	23562.00	33.3 AV	54.0	-20.7	1.20 V	211	51.6	-18.3
3	31682.00	46.3 PK	74.0	-27.7	1.00 V	215	62.6	-16.3
4	31682.00	36.2 AV	54.0	-17.8	1.00 V	215	52.5	-16.3
5	37688.00	47.6 PK	74.0	-26.4	2.10 V	300	61.9	-14.3
6	37688.00	38.2 AV	54.0	-15.8	2.10 V	300	52.5	-14.3

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 other emission levels were very low against the limit.
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-meter distance was extrapolate results to the 3-m distance:
   Test value at 3-meter distance (dBuV)
   = Test value at 1 meter distance (dBuV) -20log(3/1)(dB)
   = Test value at 1 meter distance (dBuV) -9.54(dB).

*Measurements made at 1 meter distance. Test value converted to account for 3-meter measurement distance.



For above 40 GHz

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

ANTENNA POLARITY: HORIZONTAL						
NO.	**Frequency (GHz)**	**EIRP Level (dBm)**	**Reading Value (dBm)**	**Receiver Antenna Gain (dBi)**	**Power Density (pW/cm^2)**	**Power Density Limit (pW/cm^2)**
1	116.64	-17.2	-67.8	23.2	16.805	90
2	200	-20.4	-75.6	23.3	7.976	90
ANTENNA POLARITY: VERTICAL						
NO.	**Frequency (GHz)**	**EIRP Level (dBm)**	**Reading Value (dBm)**	**Receiver Antenna Gain (dBi)**	**Power Density (pW/cm^2)**	**Power Density Limit (pW/cm^2)**
1	116.64	-16.5	-67.1	23.2	19.699	90
2	200	-17.5	-72.7	23.3	15.66	90

Note:

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

EIRP = Raw Value - Receiver Antenna Gain + 20*log(4*3.1416*D/λ)

where:

D is the measurement distance

λ is the wavelength

*Measurements made at 1 meter distance.

2. The far-field boundary is given in ANSI 63.10 as:

R far field = (2 * L^2) /λ

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
58.32	0.03	0.00514	0.35

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

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Receiver Antenna Gain (dBi)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	120.96	-17.4	-68.2	23.3	15.996	90
2	200	-20.8	-76.0	23.3	7.308	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Receiver Antenna Gain (dBi)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	120.96	-16.6	-67.4	23.3	19.365	90
2	200	-18.0	-73.1	23.3	14.151	90

Note:

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

EIRP = Raw Value - Receiver Antenna Gain + 20*log(4*3.1416*D/λ)

where:

D is the measurement distance

λ is the wavelength

*Measurements made at 1 meter distance.

2. The far-field boundary is given in ANSI 63.10 as:

R far field = (2 * L^2) /λ

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
60.48	0.03	0.00496	0.363

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

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Receiver Antenna Gain (dBi)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	125.28	-16.8	-67.9	23.3	18.429	90
2	200	-20.9	-76.0	23.3	7.224	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Receiver Antenna Gain (dBi)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	125.28	-16.1	-67.2	23.3	21.553	90
2	200	-18.0	-73.1	23.3	14.119	90

Note:

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

EIRP = Raw Value - Receiver Antenna Gain + 20*log(4*3.1416*D/λ)

where:

D is the measurement distance

λ is the wavelength

*Measurements made at 1 meter distance.

2. The far-field boundary is given in ANSI 63.10 as:

R far field = (2 * L^2) /λ

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
62.64	0.03	0.00479	0.376

CHANNEL	TX Channel 4	DETECTOR FUNCTION	Average (AV)
FREQUENCY RANGE	40GHz ~ 200GHz		

ANTENNA POLARITY: HORIZONTAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Receiver Antenna Gain (dBi)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	129.6	-16.5	-67.8	23.4	19.795	90
2	200	-20.5	-75.7	23.3	7.881	90
ANTENNA POLARITY: VERTICAL						
NO.	Frequency (GHz)	EIRP Level (dBm)	Reading Value (dBm)	Receiver Antenna Gain (dBi)	Power Density (pW/cm^2)	Power Density Limit (pW/cm^2)
1	129.6	-16.2	-67.5	23.4	21.211	90
2	200	-17.7	-72.8	23.3	15.016	90

Note:

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

EIRP = Raw Value - Receiver Antenna Gain + 20*log(4*3.1416*D/λ)

where:

D is the measurement distance

λ is the wavelength

*Measurements made at 1 meter distance.

2. The far-field boundary is given in ANSI 63.10 as:

R far field = (2 * L^2) /λ

L is the Largest Antenna Dimension, including the reflector

λ is the wavelength

Frequency (GHz)	L (m)	Lambda (m)	R (Far Field) (m)
64.8	0.03	0.00463	0.389

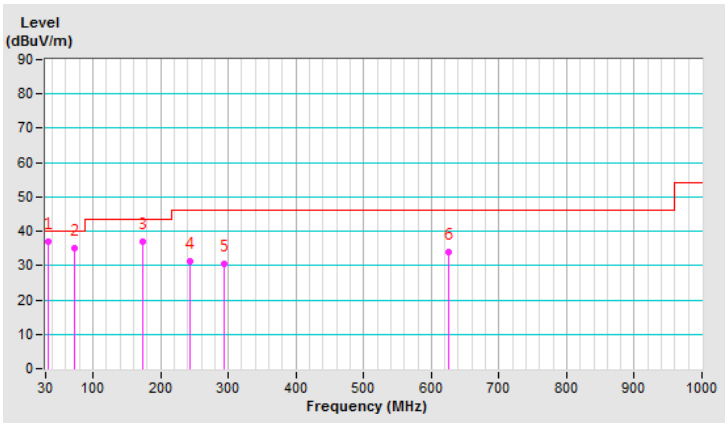
For below 1GHz

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	33.49	36.9 QP	40.0	-3.1	1.00 H	44	46.3	-9.4
2	73.12	35.0 QP	40.0	-5.0	2.50 H	52	46.4	-11.4
3	174.41	36.8 QP	43.5	-6.7	2.00 H	1	45.6	-8.8
4	243.96	31.4 QP	46.0	-14.6	1.00 H	336	40.1	-8.7
5	293.16	30.6 QP	46.0	-15.4	1.00 H	5	37.4	-6.8
6	625.00	34.0 QP	46.0	-12.0	2.00 H	0	32.7	1.3

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 other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

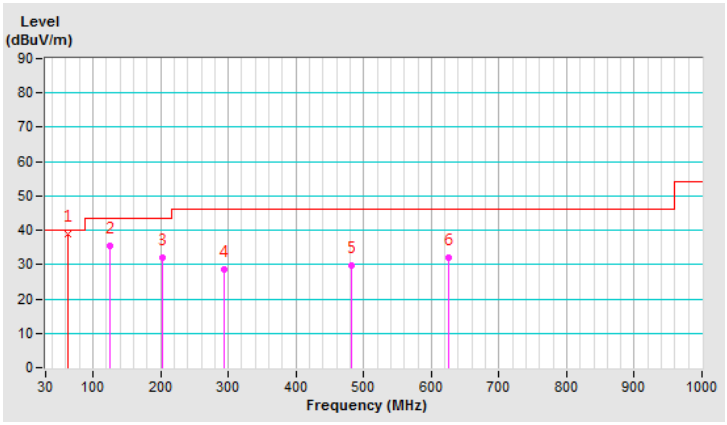


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	**62.47**	**38.9 QP**	**40.0**	**-1.1**	**1.00 V**	**306**	**47.8**	**-8.9**
2	125.01	35.6 QP	43.5	-7.9	1.00 V	153	45.2	-9.6
3	202.13	31.9 QP	43.5	-11.6	1.50 V	360	41.9	-10.0
4	292.94	28.6 QP	46.0	-17.4	1.50 V	360	35.4	-6.8
5	481.83	29.6 QP	46.0	-16.4	1.50 V	351	31.7	-2.1
6	625.02	31.9 QP	46.0	-14.1	2.00 V	0	30.6	1.3

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 other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

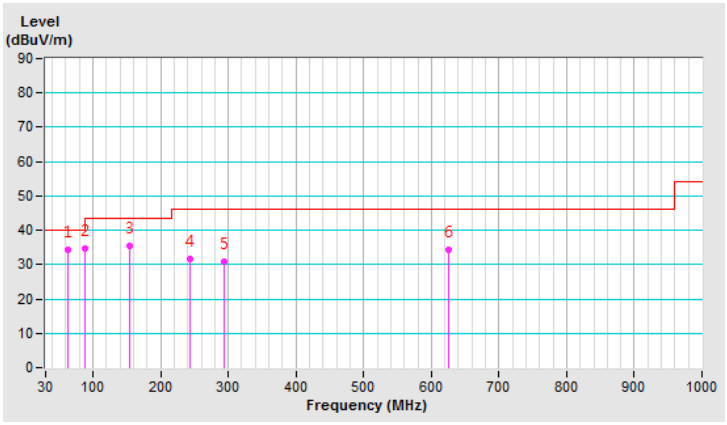


CHANNEL	TX Channel 2	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	63.56	34.4 QP	40.0	-5.6	2.00 H	80	43.5	-9.1
2	88.42	34.7 QP	43.5	-8.8	2.00 H	74	48.1	-13.4
3	154.60	35.5 QP	43.5	-8.0	2.00 H	302	43.1	-7.6
4	243.20	31.8 QP	46.0	-14.2	1.00 H	299	40.5	-8.7
5	293.29	30.8 QP	46.0	-15.2	1.00 H	33	37.6	-6.8
6	624.84	34.2 QP	46.0	-11.8	2.00 H	30	32.9	1.3

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 other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

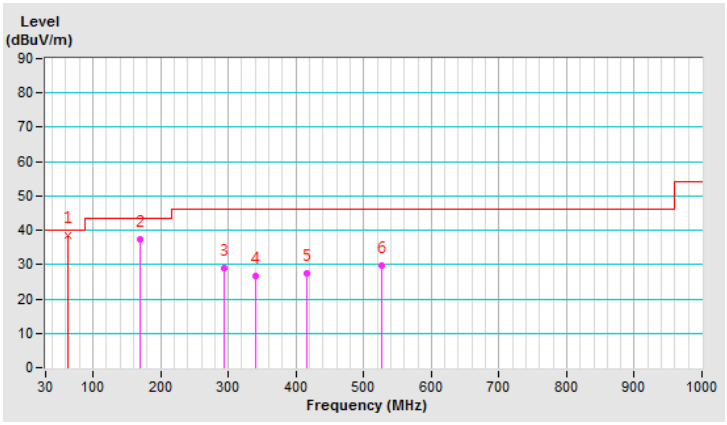


CHANNEL	TX Channel 2	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	62.10	38.5 QP	40.0	-1.5	1.00 V	289	47.5	-9.0
2	170.04	37.5 QP	43.5	-6.0	1.00 V	66	46.1	-8.6
3	293.33	28.9 QP	46.0	-17.1	1.50 V	304	35.7	-6.8
4	339.72	26.8 QP	46.0	-19.2	1.50 V	335	32.3	-5.5
5	415.55	27.4 QP	46.0	-18.6	1.50 V	4	31.2	-3.8
6	526.86	29.7 QP	46.0	-16.3	2.00 V	360	30.7	-1.0

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

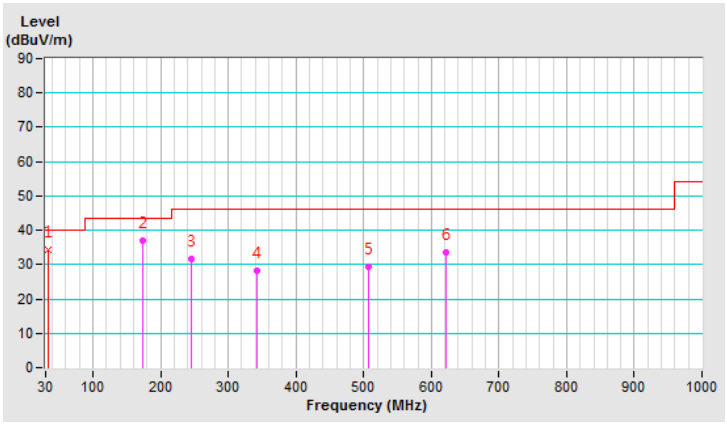


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	33.78	34.2 QP	40.0	-5.8	1.00 H	44	43.5	-9.3
2	174.22	37.0 QP	43.5	-6.5	2.00 H	21	45.8	-8.8
3	244.50	31.8 QP	46.0	-14.2	1.00 H	360	40.3	-8.5
4	342.82	28.2 QP	46.0	-17.8	1.00 H	360	33.7	-5.5
5	507.65	29.4 QP	46.0	-16.6	2.50 H	208	30.5	-1.1
6	621.10	33.5 QP	46.0	-12.5	1.50 H	70	32.2	1.3

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 other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

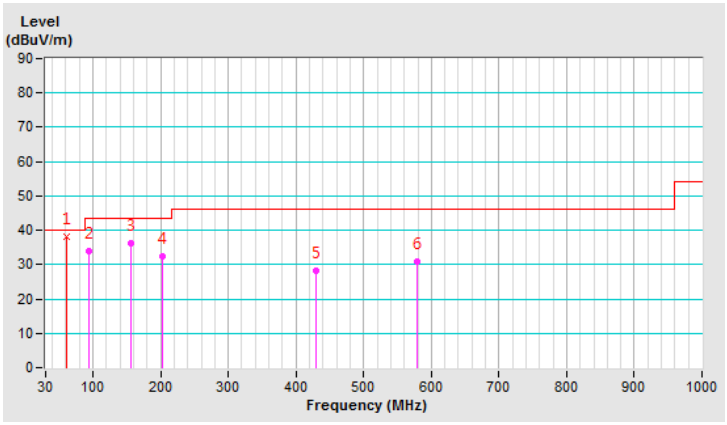


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	61.90	38.2 QP	40.0	-1.8	1.00 V	255	47.2	-9.0
2	93.78	34.0 QP	43.5	-9.5	1.50 V	76	47.0	-13.0
3	155.45	36.2 QP	43.5	-7.3	1.50 V	360	43.9	-7.7
4	202.43	32.4 QP	43.5	-11.1	1.50 V	333	42.4	-10.0
5	429.25	28.2 QP	46.0	-17.8	1.50 V	26	31.5	-3.3
6	578.92	30.8 QP	46.0	-15.2	2.00 V	96	30.6	0.2

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 other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

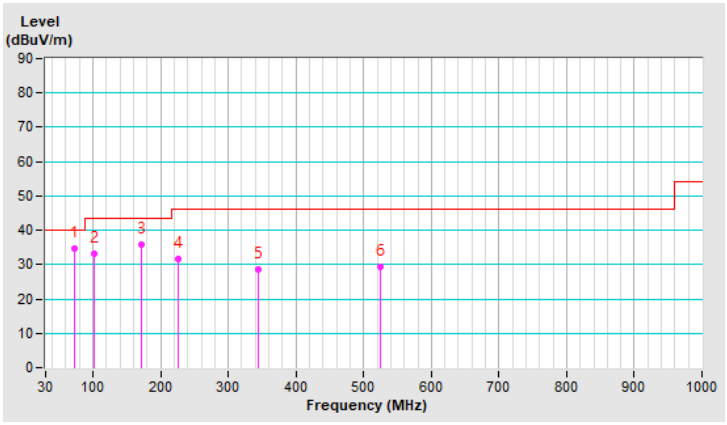


CHANNEL	TX Channel 4	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	73.39	34.7 QP	40.0	-5.3	2.50 H	77	46.2	-11.5
2	101.37	33.2 QP	43.5	-10.3	2.50 H	294	45.1	-11.9
3	171.38	35.9 QP	43.5	-7.6	2.00 H	21	44.5	-8.6
4	225.16	31.6 QP	46.0	-14.4	2.00 H	360	41.3	-9.7
5	343.60	28.6 QP	46.0	-17.4	1.50 H	320	34.1	-5.5
6	524.09	29.5 QP	46.0	-16.5	2.50 H	360	30.5	-1.0

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

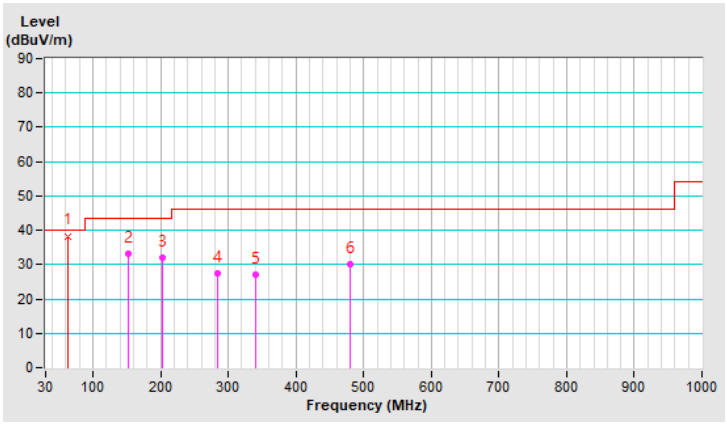


CHANNEL	TX Channel 4	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	62.06	38.3 QP	40.0	-1.7	1.00 V	279	47.3	-9.0
2	153.09	33.0 QP	43.5	-10.5	1.00 V	213	40.7	-7.7
3	201.95	31.9 QP	43.5	-11.6	1.50 V	360	41.9	-10.0
4	284.04	27.6 QP	46.0	-18.4	1.50 V	360	34.6	-7.0
5	340.21	27.2 QP	46.0	-18.8	1.50 V	300	32.7	-5.5
6	480.77	30.1 QP	46.0	-15.9	2.00 V	360	32.2	-2.1

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
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. 14, 2019	Mar. 13, 2020
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: Aug. 02, 2019

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.

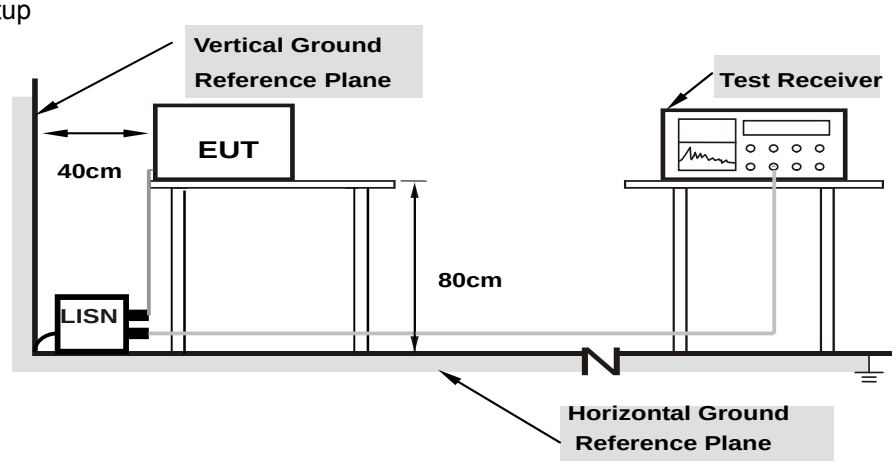
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

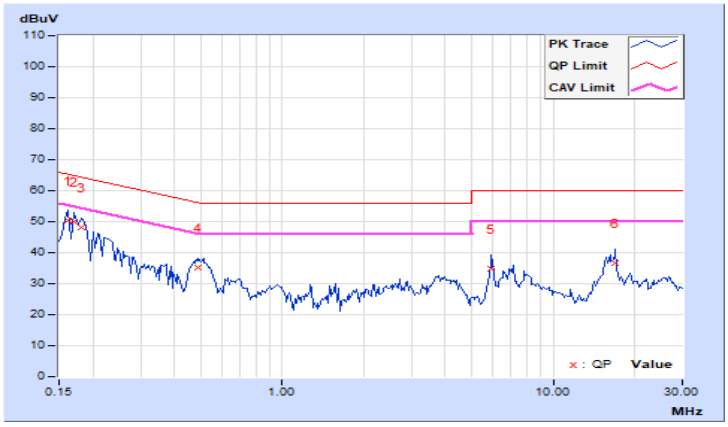
4.2.7 Test Results

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.95	40.26	19.14	50.21	29.09	65.38	55.38	-15.17	-26.29
2	**0.16953**	**9.95**	**40.09**	**24.06**	**50.04**	**34.01**	**64.98**	**54.98**	**-14.94**	**-20.97**
3	0.18125	9.95	38.14	21.89	48.09	31.84	64.43	54.43	-16.34	-22.59
4	0.48594	9.97	25.34	12.43	35.31	22.40	56.24	46.24	-20.93	-23.84
5	5.89844	10.26	24.73	15.79	34.99	26.05	60.00	50.00	-25.01	-23.95
6	17.00000	10.87	25.79	19.40	36.66	30.27	60.00	50.00	-23.34	-19.73

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

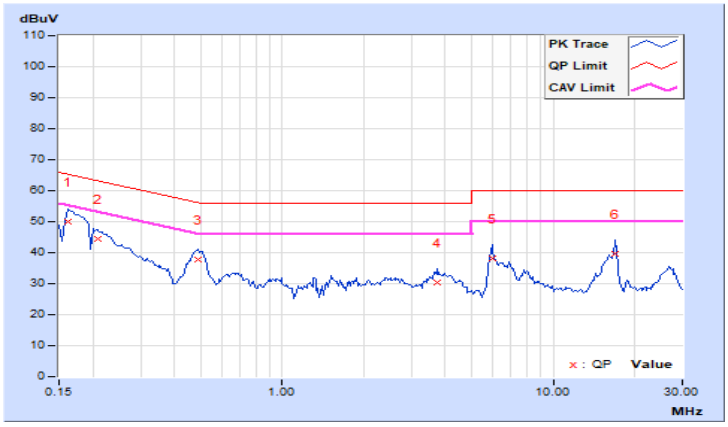


Channel	TX Channel 3		
Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.93	40.18	20.05	50.11	29.98	65.38	55.38	-15.27	-25.40
2	0.20859	9.93	34.33	17.53	44.26	27.46	63.26	53.26	-19.00	-25.80
3	0.48984	9.95	27.90	16.09	37.85	26.04	56.17	46.17	-18.32	-20.13
4	3.75000	10.10	20.09	8.62	30.19	18.72	56.00	46.00	-25.81	-27.28
5	5.93750	10.19	28.12	18.75	38.31	28.94	60.00	50.00	-21.69	-21.06
6	16.98047	10.65	28.89	22.74	39.54	33.39	60.00	50.00	-20.46	-16.61

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

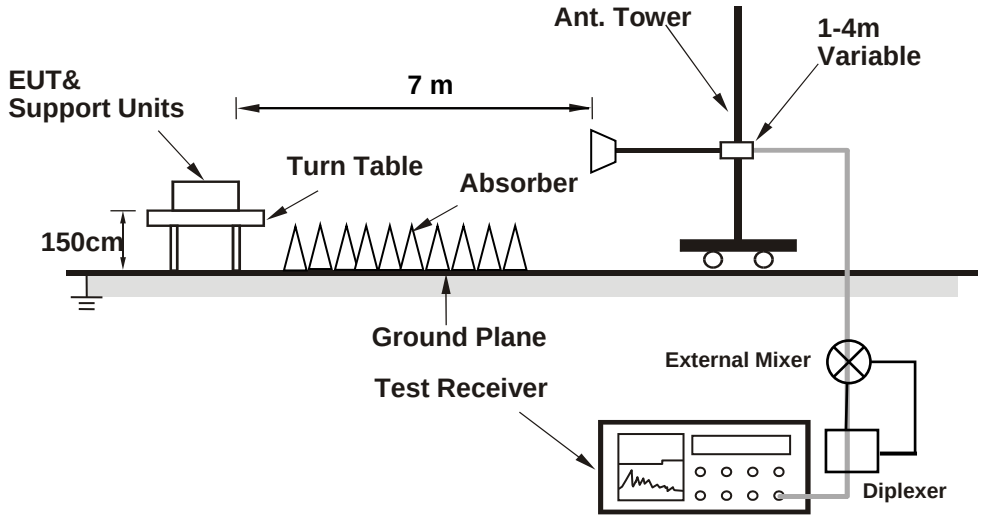


4.3 6dB Bandwidth Measurement

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 specific channel frequencies individually.

4.3.7 Test Result

Channel	Frequency (GHz)	6dB Bandwidth (GHz)
1	58.32	1.783
2	60.48	1.653
3	62.64	1.893
4	64.80	1.926

Spectrum Plot of Worst Value

CH1

CH2

CH3

CH4

4.4 Output Power Measurement

4.4.1 Limits of Output Power Measurement

15.255 (c) & (e)

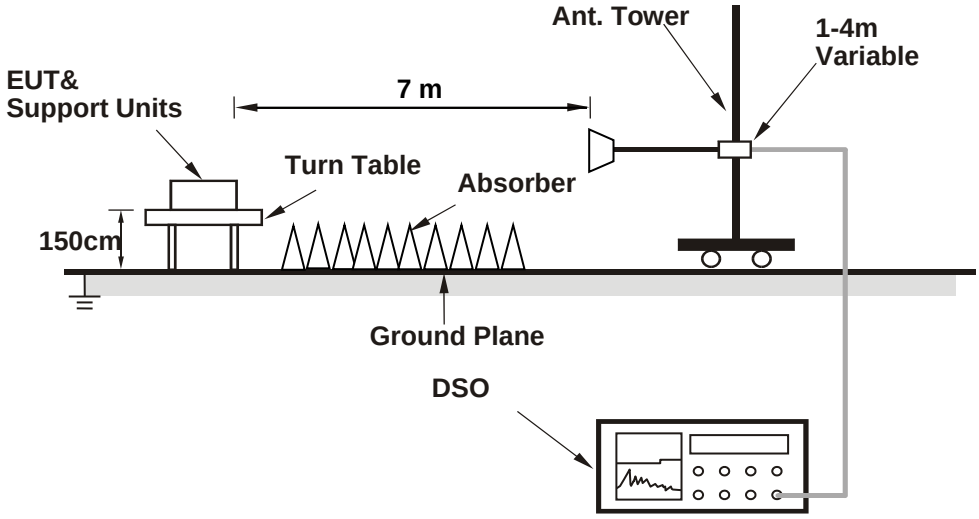
Output Power (EIRP)				
Applicaple	**Type**		**Peak Power**	**Average Power**
	Within the 57-71 GHz band (Other than fixed field disturbance sensors and short-range devices)	Other than fixed point to point transmitters located outdoors	43dBm	40dBm
V		Fixed point-to-point transmitters located outdoors	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
		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)
58.32	0.41	0.00514	65.409
60.48	0.41	0.00496	67.782
62.64	0.41	0.00479	70.188
64.80	0.41	0.00463	72.613

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

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

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	23.7	31.96	55.66	59	Pass
2	60.48	23.7	31.92	55.62	59	Pass
3	62.64	24	31.68	55.68	59	Pass
4	64.80	24	31.62	55.62	59	Pass

Channel	Frequency (GHz)	EIRP (dBm)	Max. Antenna Gain (dBi)	Conducted Output Power (dBm)	Conducted Output Power (mW)	Conducted Output Power limit (mW)	Pass /Fail
1	58.32	55.66	38.00	17.66	58.3	500	Pass
2	60.48	55.62	38.00	17.62	57.8	500	Pass
3	62.64	55.68	38.00	17.68	58.6	500	Pass
4	64.80	55.62	38.00	17.62	57.8	500	Pass

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

For Average Power

Channel	Frequency (GHz)	Transmitt Antenna	S.G Output Value (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Pass /Fail
1	58.32	23.7	18.91	42.61	56	Pass
2	60.48	23.7	18.90	42.60	56	Pass
3	62.64	24	18.65	42.65	56	Pass
4	64.80	24	18.63	42.63	56	Pass

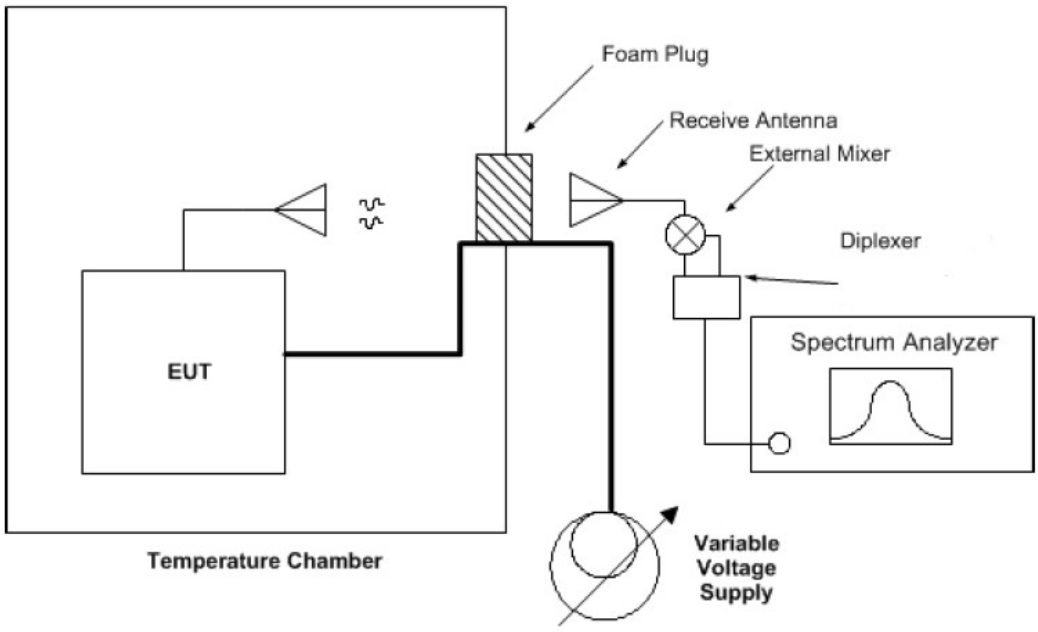
Note:
1. The EIRP was evaluated on vertical and horizontal polarization, the worst case is Vertical polarization.

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: 62640 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
50	24	62639.6938	Pass	62639.679	Pass	62639.6686	PASS	62639.7193	Pass
40	24	62639.9908	Pass	62639.9677	Pass	62639.9681	PASS	62639.9818	Pass
30	24	62640.01	Pass	62640.064	Pass	62640.0362	PASS	62640.0415	Pass
20	24	62640.0642	Pass	62640.0214	Pass	62640.0102	PASS	62640.0514	Pass
10	24	62639.7101	Pass	62639.7394	Pass	62639.7526	PASS	62639.766	Pass
0	24	62640.0983	Pass	62640.1064	Pass	62640.1125	PASS	62640.1246	Pass
-10	24	62640.3281	Pass	62640.3079	Pass	62640.3057	PASS	62640.3243	Pass
-20	24	62640.1346	Pass	62640.0869	Pass	62640.113	PASS	62640.1003	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 62640 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	27.6	62640.0626	Pass	62640.0106	Pass	62640.0207	Pass	62640.0524	Pass
	24	62640.0642	Pass	62640.0214	Pass	62640.0102	Pass	62640.0514	Pass
	20.4	62640.0585	Pass	62640.014	Pass	62640.0063	Pass	62640.0637	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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The address and road map of all our labs can be found in our web site also.

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