

TEST REPORT

APPLICANT : Realme Chongqing Mobile

Telecommunications Corp., Ltd.

PRODUCT NAME: Mobile Phone

MODEL NAME: RMX5313

BRAND NAME: realme

FCC ID : 2AUYFRMX5313

STANDARD(S) : 47 CFR Part 15 Subpart C

RECEIPT DATE : 2025-06-04

TEST DATE : 2025-06-06 to 2025-06-20

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Change History			
Version Date		Reason for change	
1.0	2025-07-04	First edition	



1. Summary of Test Result

No.	Section	Description	Test Date	Test Engineer	Result	Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	1
2	N/A	Duty Cycle of Test Signal	Jun. 10, 2025	Li Xinpeng	PASS	1
3	15.247(b)	Maximum Peak Conducted Output Power	Jun. 10, 2025	Li Xinpeng	PASS	/
4	15.247(b)	Maximum Average Conducted Output Power	Jun. 10, 2025	Li Xinpeng	PASS	/
5	15.247(a)	Bandwidth	Jun. 10, 2025	Li Xinpeng	PASS	/
6	15.247(d)	Conducted Spurious Emission and Band Edge	Jun. 10, 2025	Li Xinpeng	PASS	/
7	15.247(e)	Power Spectral Density	Apr. 23, 2025	Li Xinpeng	PASS	1
8	15.207	Conducted Emission	Jun. 06, 2025	Fan Shengquan	PASS	1
9	15.247(d)	Restricted Frequency Bands	Jun. 11, 2025	Tian Xin	PASS	1
10	15.209, 15.247(d)	Radiated Emission	Jun. 13, 2025	Tian Xin	PASS	/

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2013 and KDB 558074 D01 v05r02.

Note 2: Any additions, deviation, or exclusions from the method shall be noted in the "Remark".

1.1. Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

• 47 CFR Part 15 Subpart C Radio Frequency Devices





1.2. Test Equipment List

1.2.1 Conducted Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal	MY53470836	N9010A	Agilent	2025.01.15	2026.01.14
Analzyer	1011 3347 0030	NOTOA	Agilent	2023.01.13	2020.01.14
RF Cable	0004	DEG	Maylala	N/A	N/A
(30MHz-26GHz)	CB01	RF01	Morlab	IN/A	IN/A
CMA Commonton	CNIO4	DEOO	HUBER-	NI/A	N1/A
SMA Connector	CN01	RF03	SUHNER	N/A	N/A

1.2.2 Conducted Emission Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	101052	ESPI	R&S	2025.05.15	2026.05.14
LISN	103131	ENV 216	R&S	2025.03.20	2026.03.19
Pulse Limiter (10dB)	VTSD 9561 F- B #206	VTSD 9561-F	R&S	2025.05.13	2026.05.12
RF Coaxial Cable (DC-100MHz)	EMC-CE- 00514	N/A	N/A	2025.05.06	2026.05.05

1.2.3 List of Software Used

Description	Manufacturer	Software Version
Test System	MaiWei	2.0.0.0
JS32-RE	Tonscend	5.0.0
TS+ -[JS32-CE]	Tonscend	2.5.0.0



1.2.4 Radiated Test Equipment

Equipment	Serial No.	Туре	Manufacturer	Cal. Date	Due Date
Signal Analyzer	MY56060145	N9020A	Agilent	2025.05.13	2026.05.12
Test Antenna - Bi- Log	9163-519	VULB 9163	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2025.05.16	2026.05.15
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna – Horn	BBHA9170 #773	BBHA9170	Schwarzbeck	2024.06.22	2025.06.21
Preamplifier (10MHz-6GHz)	46732	S10M100L38 02	LUCIX CORP.	2025.05.13	2026.05.12
Preamplifier (2GHz-18GHz)	61171/61172	S020180L32 03	LUCIX CORP.	2025.05.13	2026.05.12
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118- 40C-S	Decentest	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2025.05.13	2026.05.12
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40- KK-0.5	Qualwave	2024.09.11	2025.09.10
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40- KKF-2	Qualwave	2024.09.11	2025.09.10
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18- NN-5	Qualwave	2024.09.11	2025.09.10
Notch Filter	N/A	WRCG-2400- 2483.5-60SS	Wainwright	N/A	N/A
Anechoic Chamber	N/A	9m*6m*6m	CRT	2025.04.19	2028.04.18
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.11.30	2025.11.29

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1.3. Measurement Uncertainty

Test Items	Uncertainty	Remark
Peak Output Power	±2.22dB	Confidence levels of 95%
Power Spectral Density	±2.22dB	Confidence levels of 95%
Bandwidth	±5%	Confidence levels of 95%
Conducted Spurious Emission	±2.77dB	Confidence levels of 95%
Restricted Frequency Bands	±5%	Confidence levels of 95%
Radiated Emission	±2.95dB	Confidence levels of 95%
Conducted Emission	±2.44dB	Confidence levels of 95%

1.4. Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.		
	FL.3, Building A, FeiYang Science Park, No.8 LongChang		
Laboratory Address:	Road, Block 67, BaoAn District, ShenZhen, GuangDong		
	Province, P. R. China		
Telephone:	+86 755 36698555		
Facsimile:	+86 755 36698525		
FCC Designation Number:	CN1192		
FCC Test Firm Registration	226174		
Number:	226174		



2. General Description

2.1. Information of Applicant and Manufacturer

Applicant:	Realme Chongqing Mobile Telecommunications Corp., Ltd.		
Applicant Address	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing,		
Applicant Address:	China		
Manufacturer:	Realme Chongqing Mobile Telecommunications Corp., Ltd.		
Manufacturer Address	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing,		
Manufacturer Address:	China		

2.2. Information of EUT

Product Name:	Mobile Phone		
Sample No.:	1#, 11#		
Hardware Version:	11		
Software Version:	realme UI Android 15		
Equipment Type:	Bluetooth LE		
Bluetooth Version:	5.2		
Modulation Type:	GFSK		
Data Rate:	1Mbps, 2Mbps		
Operating Frequency Range:	2402MHz-2480MHz		
Antenna Type:	Inverted F Antenna		
Antenna Gain:	0.10dBi		
	Battery		
	Brand Name:	SUPERVOOC	
	Model No.:	BLPC71	
	Serial No.:	N/A	
	Capacity:	Typical: 6000mAh, Rated: 5830mAh	
Accessory Information:	Rated Voltage:	3.88V	
Accessory information.	Charge Limit:	4.48V	
	Manufacturer:	Sunwoda Electronic Co., Ltd.	
	AC Adapter 1		
	Brand Name:	SUPERVOOC	
	Model No.:	OP53JAUH	
	Serial No.:	N/A	



Rated Output:	5V=3A
Rated Input:	100-240V~50/60Hz, 0.5A
Manufacturer:	Huizhou Golden Lake Industrial Co., Ltd.
AC Adapter 2	
Brand Name:	SUPERVOOC
Model No.:	OP53JAUH
Serial No.:	N/A
Rated Output:	5V=3A
Rated Input:	100-240V~50/60Hz, 0.5A
Manufacturer:	Jiangsu Chenyang Electron Co.,Ltd.
AC Adapter 3	
Brand Name:	realme
Model No.:	OP53CBUH
Serial No.:	N/A
D 1 10 1 1	5V=2A,
Rated Output:	5V=3A
Rated Input:	100-130V~50/60Hz, 0.35A
	200-240V~50/60Hz, 0.5A
Manufacturer:	Dongguan YOHOO Electronic Technology Co Ltd
AC Adapter 4	
Brand Name:	realme
Model No.:	OP53CBUH
Serial No.:	N/A
Data d Outrout	5V=2A,
Rated Output:	5V=3A
Rated Input:	100-130V~50/60Hz, 0.35A
	200-240V~50/60Hz, 0.5A
Manufacturer:	Jiangsu Chenyang Electron Co.,Ltd.
USB Cable 1	
Model No.:	DL129
USB Cable 2	
Model No.:	DL154

Note 1: The EUT description presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.





2.3. Channel List of EUT

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Note 1: The black bold channels were selected for test.



2.4. Test Configuration of EUT

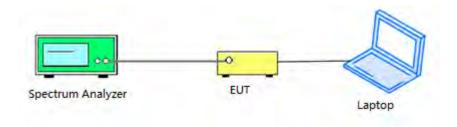
The EUT is controlled by dedicated software to transmit at the default maximum power level.

2.5. Test Conditions

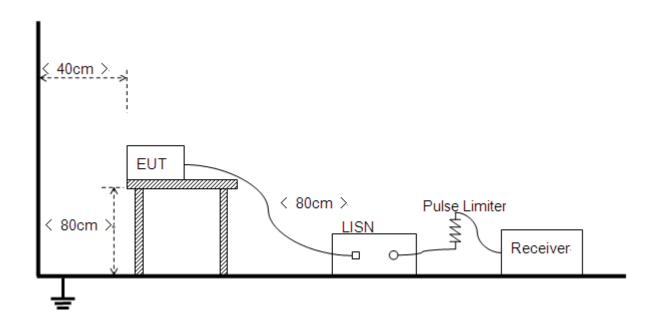
Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

2.6. Test Setup Layout Diagram

2.6.1.Conducted Measurement



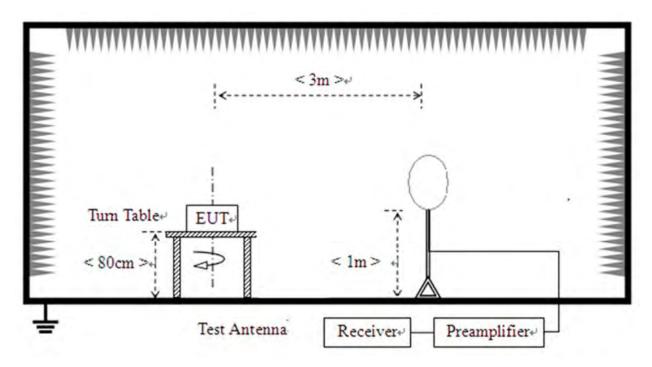
2.6.2.Conducted Emission Measurement



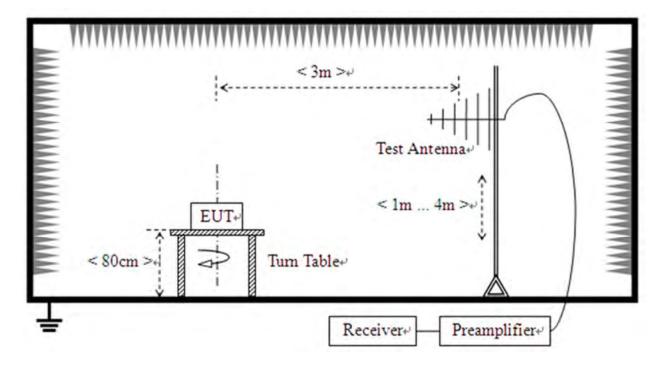


2.6.3. Radiation Measurement

1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz

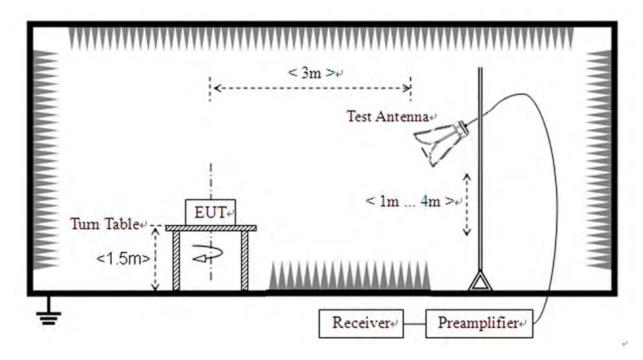


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3) For radiated emissions above 1GHz







3.1. Antenna Requirement

3. Test Results

3.1.1.Requirement

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.1.2.Test Result

Antenna location	Antenna Type	Coupling Method
⊠Internal	☐FPC Antenna	☐I-PEX Connector
□External	□Spring Antenna	☐SMA Connector
	☐Ceramic Antenna	□RP-SMA Connector
	□Integrated Antenna	⊠Metal Shrapnel
	□Dipole Antenna	□Layout
	□PCB Antenna	
	□PIFA Antenna	
	⊠Inverted F Antenna	



3.2. Duty Cycle of Test Signal

3.2.1.Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration(T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e.,no transmitter OFF-time is to be considered).

When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this sub clause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than ±2%; otherwise, the duty cycle is considered to be non constant.

3.2.2.Test Result

Refer to Annex A.1 in this report.



3.3. Maximum Peak Conducted Output Power

3.3.1.Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

3.3.2.Test Procedures

KDB 558074 Section 8.3.1 was used in order to prove compliance.

3.3.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.3.4.Test Result

Refer to Annex A.2 in this report.



3.4. Maximum Average Conducted Output Power

3.4.1.Requirement

According to FCC section 15.247(b)(3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum average conducted output power of the intentional radiator shall not exceed 1 Watt.

3.4.2.Test Procedures

KDB 558074 Section 8.3.2 was used in order to prove compliance.

3.4.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.4.4.Test Result

Refer to Annex A.3 in this report.





3.5.6 dB Bandwidth

3.5.1.Requirement

According to FCC section 15.247(a) (2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

3.5.1.Test Procedures

The steps for the first option are as follows:

- a) Set analyzer center frequency to channel center frequency
- b) Set RBW to100kHz
- c) Set VBW to 300kHz
- d) Detector = peak.
- e) Trace mode = max hold
- f) Sweep time = auto couple
- g) Allow the trace to fully stabilize
- h) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by6 dB relative to the maximum level measured in the fundamental emission

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW \geq 3 \times RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be \geq 6 dB.

3.5.2.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.5.3.Test Result

Refer to Annex A.4 in this report.





3.6. Conducted Spurious Emissions and Band Edge

3.6.1.Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

3.6.2.Test Procedures

KDB 558074 Section 8.5 and 8.7 was used in order to prove compliance.

3.6.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.6.4.Test Result

Refer to Annex A.5 and A.6 in this report.



3.7. Power Spectral Density

3.7.1.Requirement

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

3.7.2.Test Procedures

The measured power spectral density was calculated by the reading of the spectrum analyzer and calibration. Following is the test procedure for PSD test:

- a) Set analyzer center frequency to channel center frequency
- b) Set span to 1.5 times DTS
- c) Set RBW to 3kHz
- d) Set VBW to 10kHz
- e) Detector = peak
- f) Sweep time = auto couple
- g) Trace mode = max hold
- h) Allow trace to fully stabilize
- i) Use the peak marker function to determine the maximum amplitude level within the RBW

3.7.3.Test Setup Layout

Refer to chapter 2.6.1 in this report.

3.7.4.Test Result

Refer to Annex A.7 in this report.





3.8. Conducted Emission

3.8.1.Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μ H/ 50Ω line impedance stabilization network (LISN).

Fraguency Bango (MHz)	Conducted Limit (dBµV)						
Frequency Range (MHz)	Quai-peak	Average					
0.15 - 0.50	66 to 56	56 to 46					
0.50 - 5	56	46					
5 - 30	60	50					

Note:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 0.50MHz.

3.8.2.Test Procedures

The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

3.8.3.Test Setup Layout

Refer to chapter 2.6.2 in this report.

3.8.4.Test Result

Refer to Annex A.8 in this report.

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3.9. Restricted Frequency Bands

3.9.1.Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

3.9.2.Test Procedures

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1GHz

VBW = 3 MHz

Sweep = auto

Detector function = peak/average

Trace = max hold

Allow the trace to stabilize

3.9.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.9.4.Test Result

Refer to Annex A.9 in this report.





3.10. Radiated Emission

3.10.1.Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)
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

Note1: For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit. Note2: For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

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3.10.2.Test Procedures

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

3.10.3.Test Setup Layout

Refer to chapter 2.6.3 in this report.

3.10.4.Test Result

Refer to Annex A.10 in this report.



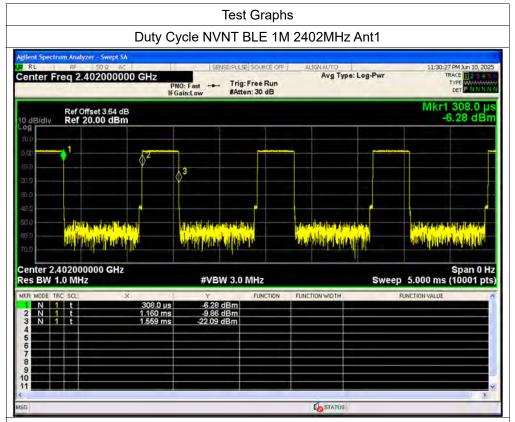
Annex A Test Data and Result

A.1. Duty Cycle of Test Signal

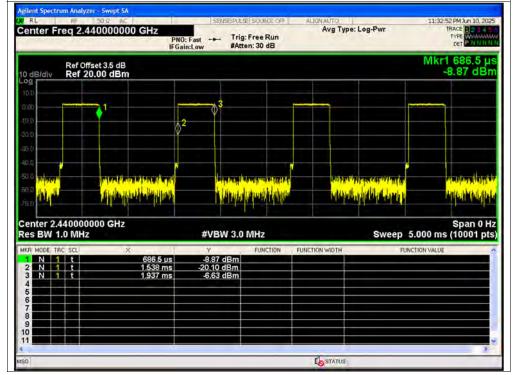
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	BLE 1M	2402	Ant1	31.87	4.97	2.51
NVNT	BLE 1M	2440	Ant1	31.88	4.96	2.51
NVNT	BLE 1M	2480	Ant1	31.87	4.97	2.51
NVNT	BLE 2M	2402	Ant1	32.72	4.85	4.89
NVNT	BLE 2M	2440	Ant1	32.72	4.85	4.89
NVNT	BLE 2M	2480	Ant1	32.77	4.84	4.88

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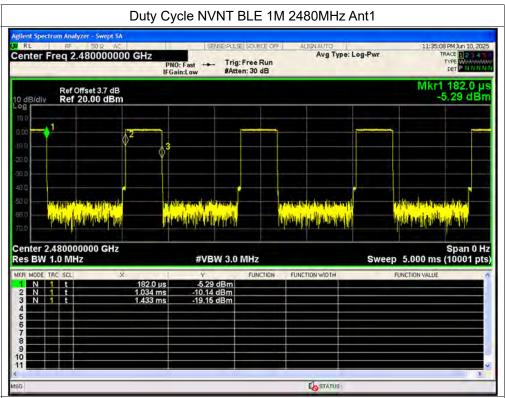




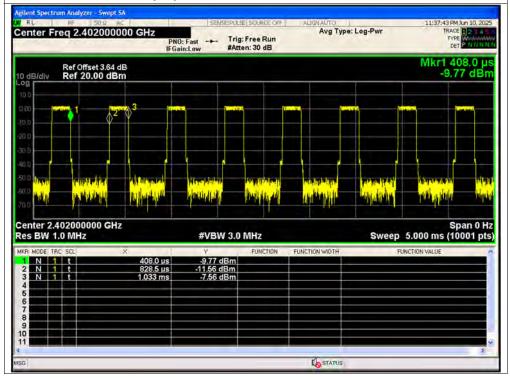






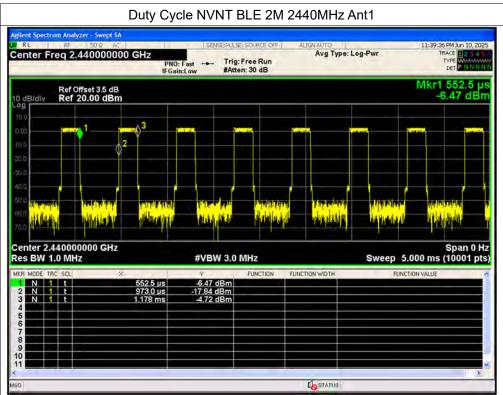




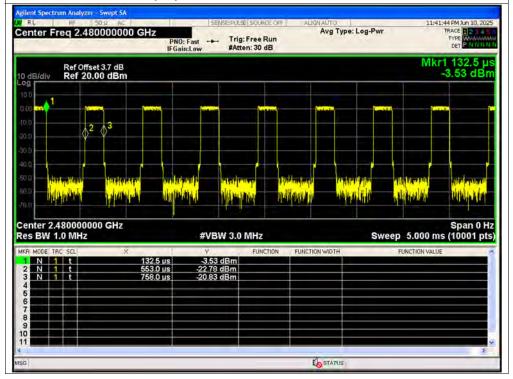
















A.2. Maximum Peak Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	2.54	0	2.54	0.00179	30	Pass
NVNT	BLE 1M	2440	Ant1	3	0	3	0.002	30	Pass
NVNT	BLE 1M	2480	Ant1	2.7	0	2.7	0.00186	30	Pass
NVNT	BLE 2M	2402	Ant1	2.53	0	2.53	0.00179	30	Pass
NVNT	BLE 2M	2440	Ant1	2.9	0	2.9	0.00195	30	Pass
NVNT	BLE 2M	2480	Ant1	2.47	0	2.47	0.00177	30	Pass





STATUS







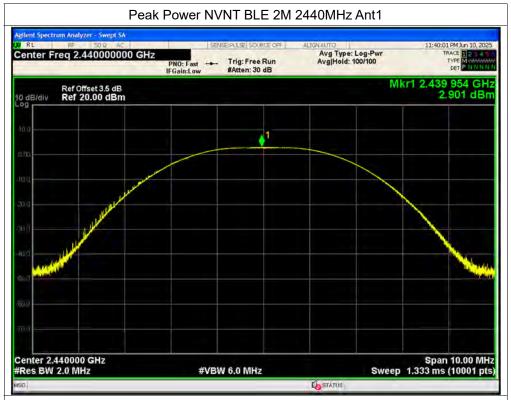


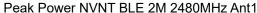














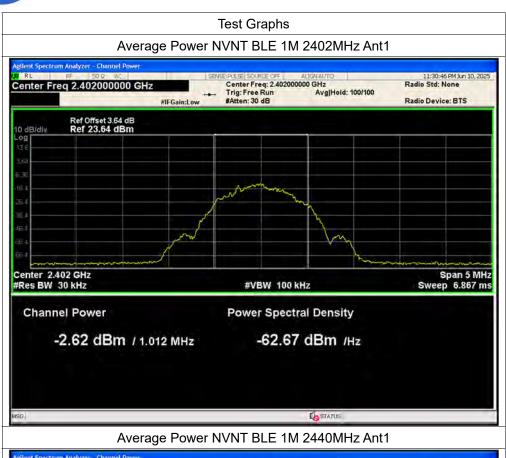


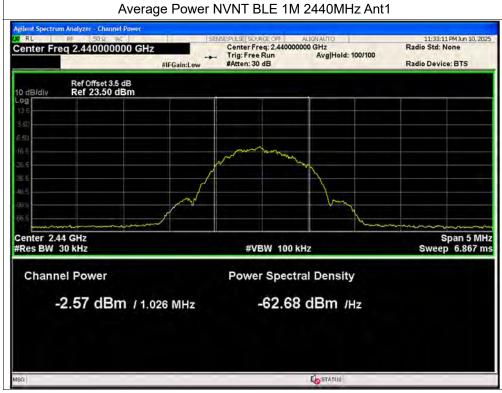


A.3. Maximum Average Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Conducted Power (dBm)	Total Conducted Power (W)	Limit Conducted (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-2.62	4.97	2.35	0.00172	30	Pass
NVNT	BLE 1M	2440	Ant1	-2.57	4.96	2.39	0.00173	30	Pass
NVNT	BLE 1M	2480	Ant1	-2.97	4.97	2	0.00158	30	Pass
NVNT	BLE 2M	2402	Ant1	-2.78	4.85	2.07	0.00161	30	Pass
NVNT	BLE 2M	2440	Ant1	-2.29	4.85	2.56	0.0018	30	Pass
NVNT	BLE 2M	2480	Ant1	-2.7	4.84	2.14	0.00164	30	Pass



























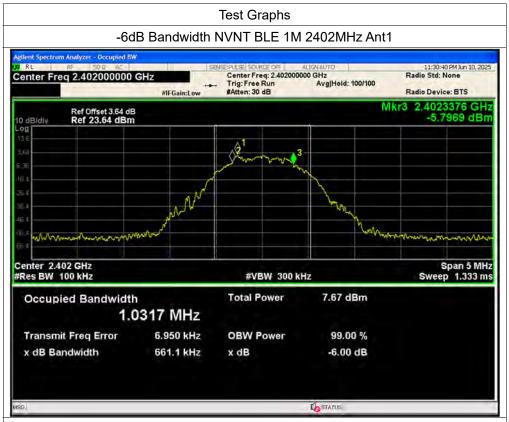




A.4. 6 dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.6611	0.5	Pass
NVNT	BLE 1M	2440	Ant1	0.6383	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.6487	0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.105	0.5	Pass
NVNT	BLE 2M	2440	Ant1	1.146	0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.104	0.5	Pass















-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1

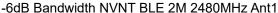














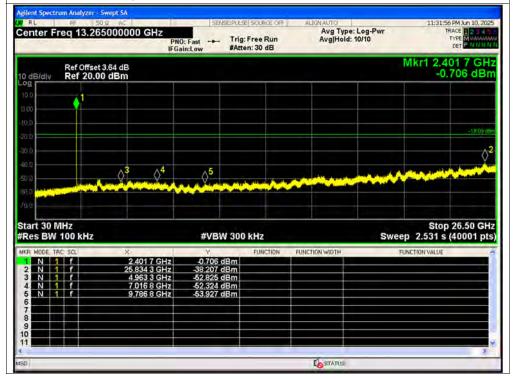


A.5. Conducted Spurious Emissions

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-40.11	-20	Pass
NVNT	BLE 1M	2440	Ant1	-41.34	-20	Pass
NVNT	BLE 1M	2480	Ant1	-41.26	-20	Pass
NVNT	BLE 2M	2402	Ant1	-41.36	-20	Pass
NVNT	BLE 2M	2440	Ant1	-40.81	-20	Pass
NVNT	BLE 2M	2480	Ant1	-41.34	-20	Pass



Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission

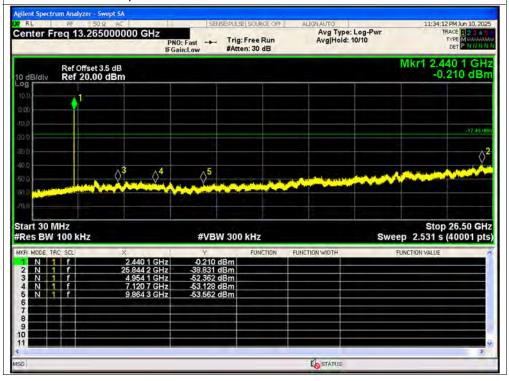










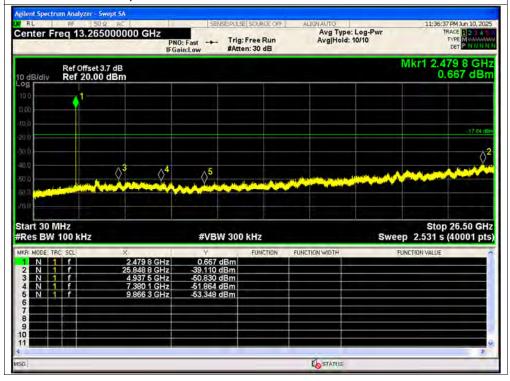








Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

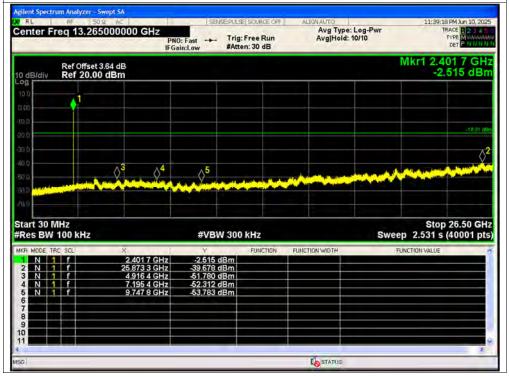








Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission

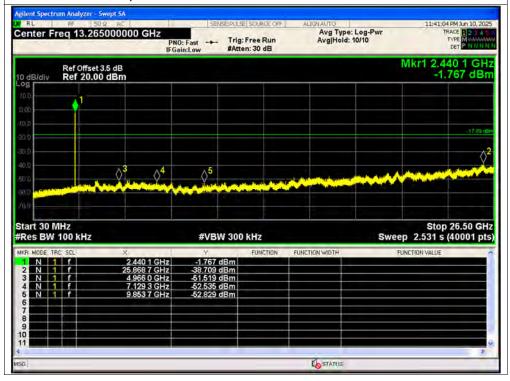








Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission

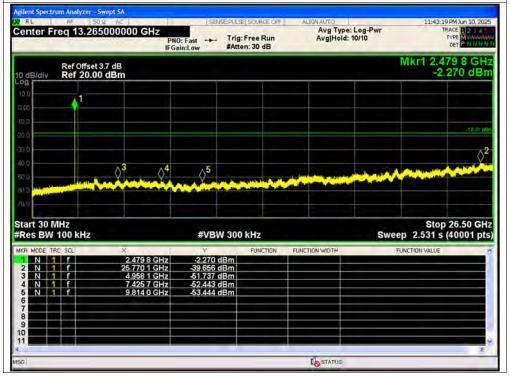








Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission





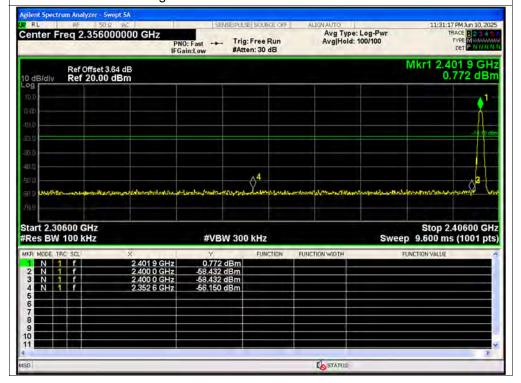


A.6. Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-58.05	-20	Pass
NVNT	BLE 1M	2480	Ant1	-57.93	-20	Pass
NVNT	BLE 2M	2402	Ant1	-47.05	-20	Pass
NVNT	BLE 2M	2480	Ant1	-56.83	-20	Pass



Band Edge NVNT BLE 1M 2402MHz Ant1 Emission

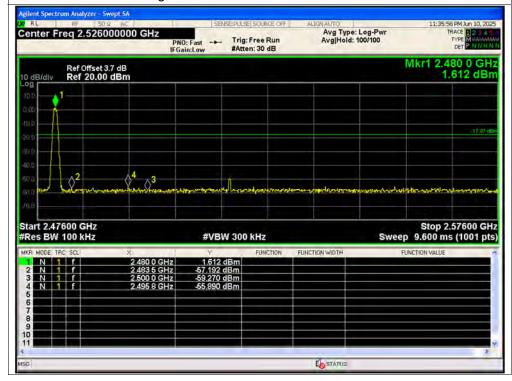














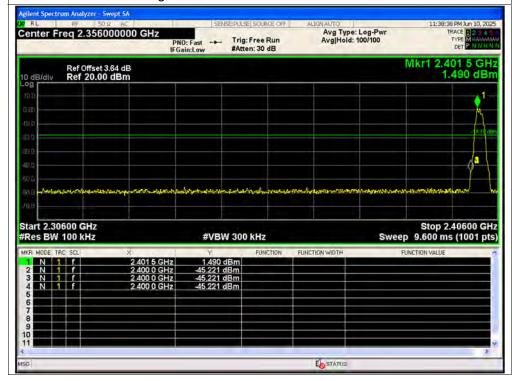
Shenzhen Morlab Communications Technology Co., Ltd.

FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen, GuangDong Province, P. R. China





Band Edge NVNT BLE 2M 2402MHz Ant1 Emission

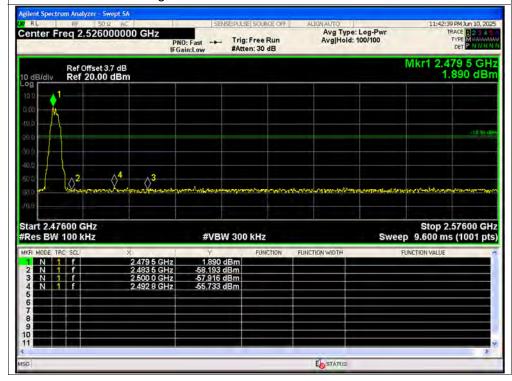








Band Edge NVNT BLE 2M 2480MHz Ant1 Emission



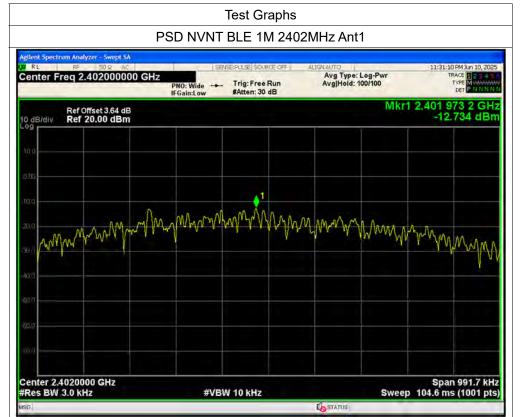




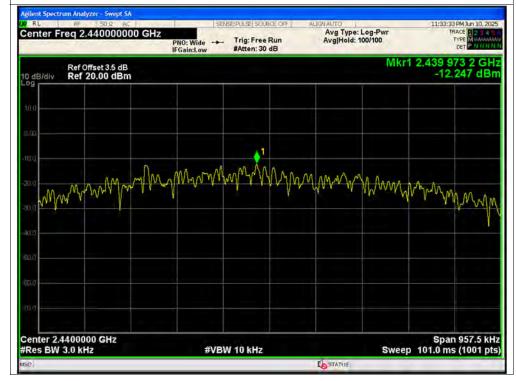
A.7. Power Spectral Density

Condition	Mode	Frequency (MHz)	Antenna	PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	BLE 1M	2402	Ant1	-12.73	0	-12.73	8	Pass
NVNT	BLE 1M	2440	Ant1	-12.25	0	-12.25	8	Pass
NVNT	BLE 1M	2480	Ant1	-12.56	0	-12.56	8	Pass
NVNT	BLE 2M	2402	Ant1	-15.23	0	-15.23	8	Pass
NVNT	BLE 2M	2440	Ant1	-14.86	0	-14.86	8	Pass
NVNT	BLE 2M	2480	Ant1	-15.22	0	-15.22	8	Pass



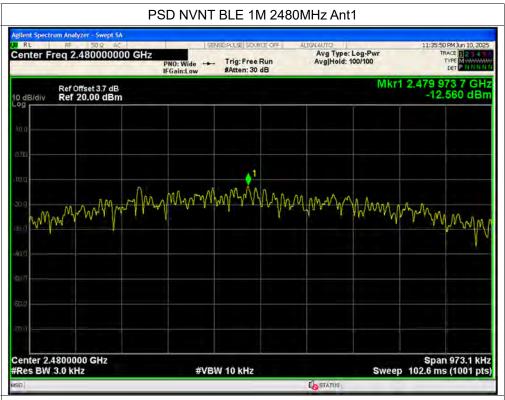




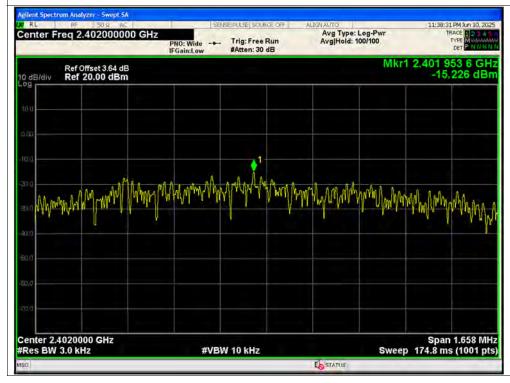






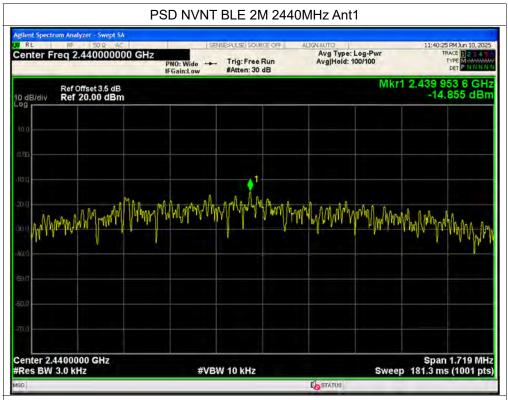




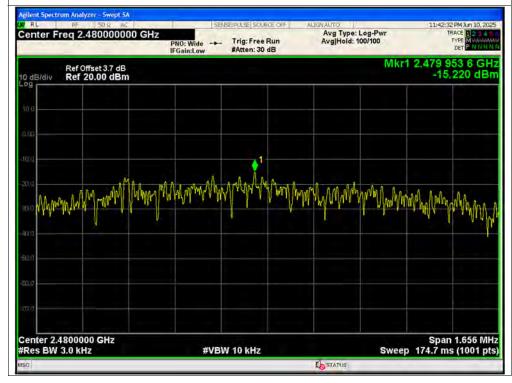
















A.8. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be remeasured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: <u>EUT+Adapter+DATA Cable+Earphone+BLE TX</u>

Test voltage: AC 120V/60Hz

The measurement results are obtained as below:

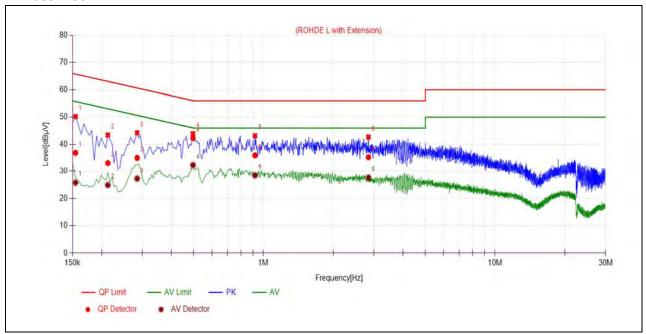
 $E [dB\mu V] = U_R + L_{Cable loss} [dB] + A_{Factor}$

U_R: Receiver Reading

A_{Factor}: Voltage division factor of LISN



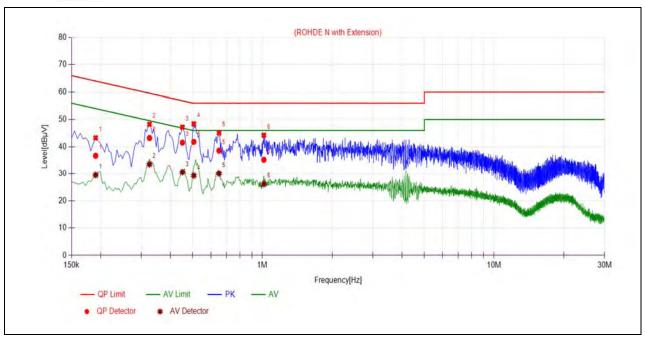
B. Test Plot:



(L Phase)

No.	Fre.	Emission L	evel (dBµV)	Limit (dBμV)	Power-line	Verdict
''	(MHz)	Quai-peak	Average	Quai-peak	Average		roraiot
1	0.1545	36.89	25.74	65.75	55.75		PASS
2	0.2130	33.09	24.86	63.09	53.09		PASS
3	0.2850	35.01	27.22	60.67	50.67	Line	PASS
4	0.4965	42.28	32.36	56.06	46.06	Lille	PASS
5	0.9195	35.94	28.41	56.00	46.00		PASS
6	2.8408	35.29	27.60	56.00	46.00		PASS





(N Phase)

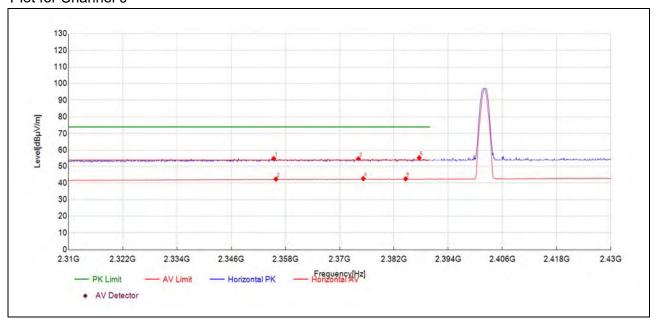
No.	Fre.	Emission L	.evel (dBµV)	Limit (dBµV)			Verdict
	(MHz)	Quai-peak	Average	Quai-peak			
1	0.1905	36.72	29.47	64.01	54.01		PASS
2	0.3255	43.23	33.58	59.57	49.57		PASS
3	0.4515	41.54	30.55	56.85	46.85	Nautral	PASS
4	0.5055	41.82	29.27	56.00	46.00	Neutral	PASS
5	0.6495	38.60	30.04	56.00	46.00		PASS
6	1.0139	35.25	26.14	56.00	46.00		PASS



A.9. Restricted Frequency Bands

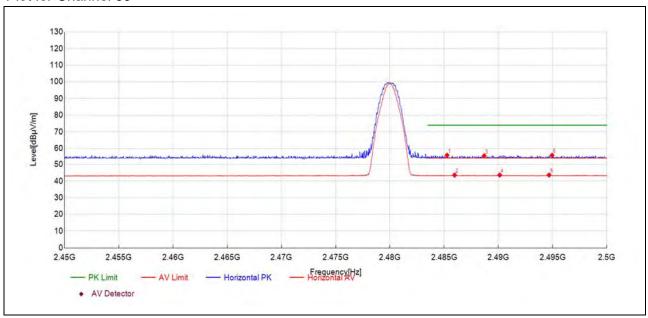
Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (Vertical) was recorded in this test report.

1MbpsPlot for Channel 0



Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Verdict
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	verdict
2355.41	22.6	54.98	32.420	74.00	19.02	150	320	PK	PASS
2355.89	9.8	42.26	32.420	54.00	11.74	150	153	AV	PASS
2374.14	22.2	54.72	32.490	74.00	19.28	150	261	PK	PASS
2375.23	10.1	42.58	32.490	54.00	11.42	150	21	AV	PASS
2384.59	9.9	42.46	32.530	54.00	11.54	150	138	AV	PASS
2387.60	22.8	55.36	32.540	74.00	18.64	150	124	PK	PASS

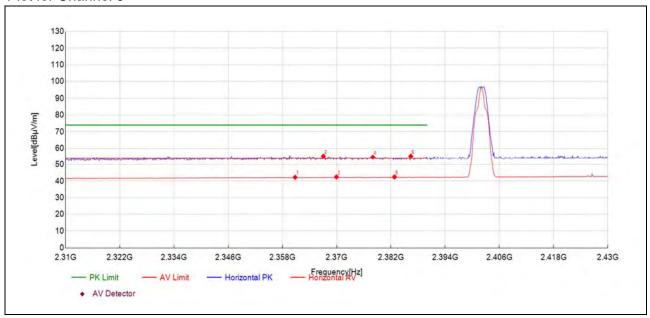




Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Verdict
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	verdict
2485.27	22.8	55.83	33.030	74.00	18.17	150	185	PK	PASS
2485.97	10.6	43.62	33.030	54.00	10.38	150	70	AV	PASS
2488.69	22.5	55.52	33.020	74.00	18.48	150	208	PK	PASS
2490.12	10.6	43.63	33.020	54.00	10.37	150	330	AV	PASS
2494.67	10.6	43.64	33.010	54.00	10.36	150	56	AV	PASS
2494.95	22.9	55.86	33.010	74.00	18.14	150	322	PK	PASS

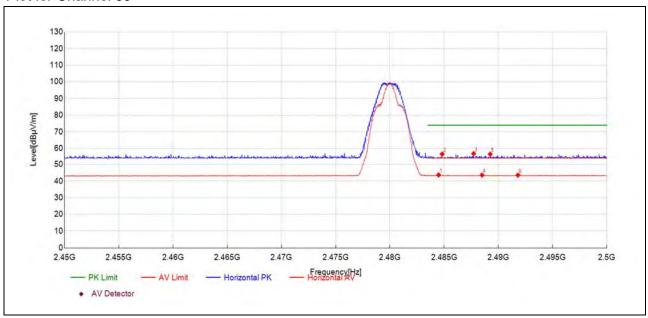


2Mbps



Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vardiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
2360.81	9.9	42.30	32.440	54.00	11.70	150	268	AV	PASS
2367.06	22.8	55.21	32.460	74.00	18.79	150	79	PK	PASS
2369.94	10.0	42.47	32.470	54.00	11.53	150	65	AV	PASS
2377.99	22.1	54.60	32.500	74.00	19.40	150	0	PK	PASS
2382.79	10.0	42.48	32.520	54.00	11.52	150	247	AV	PASS
2386.40	22.7	55.22	32.530	74.00	18.78	150	123	PK	PASS





Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Verdict
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	verdict
2484.49	10.7	43.69	33.030	54.00	10.31	150	140	AV	PASS
2484.82	23.5	56.57	33.030	74.00	17.43	150	133	PK	PASS
2487.72	23.8	56.83	33.020	74.00	17.17	150	332	PK	PASS
2488.49	10.6	43.62	33.020	54.00	10.38	150	11	AV	PASS
2489.24	23.5	56.51	33.020	74.00	17.49	150	301	PK	PASS
2491.80	10.6	43.58	33.020	54.00	10.42	150	80	AV	PASS



A.10. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

 $E [dB\mu V/m] = U_R + A_T + A_{Factor} [dB]; A_T = L_{Cable loss} [dB] - G_{preamp} [dB]$

A_T: Total correction Factor except Antenna

U_R: Receiver Reading G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

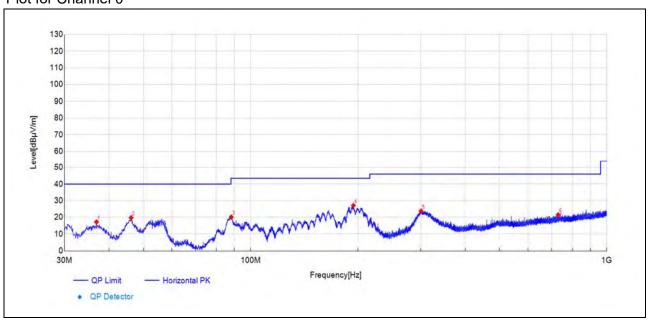
Note3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes were considered and evaluated respectively by performing full test, only the worst data were recorded.

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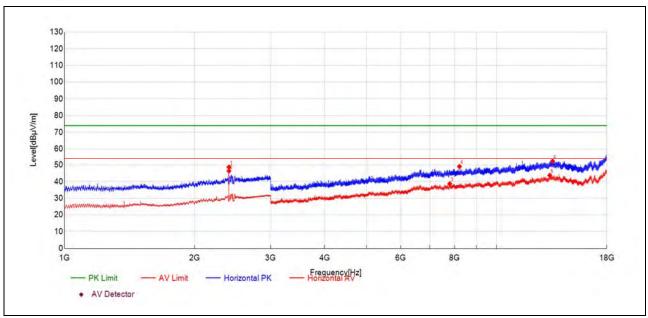
1Mbps



(Antenna Horizontal, 30MHz to 1GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vordiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
36.89	47.3	17.22	-30.100	40.00	22.78	150	55	PK	PASS
46.15	48.1	19.77	-28.310	40.00	20.23	150	0	PK	PASS
88.20	52.8	20.14	-32.650	43.50	23.36	150	0	PK	PASS
194.28	56.7	27.17	-29.540	43.50	16.33	150	248	PK	PASS
300.93	50.7	23.76	-26.950	46.00	22.24	150	96	PK	PASS
730.08	38.9	21.52	-17.350	46.00	24.48	150	248	PK	PASS

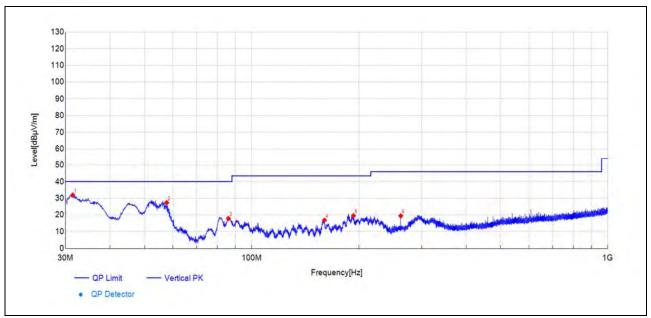




(Antenna Horizontal, 1GHz to 18GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiat
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
2402.09	48.0	48.70	0.750	74.00	25.30	150	179	PK	NA
2402.09	45.7	46.42	0.750	54.00	7.58	150	187	AV	NA
7791.66	42.3	38.67	-3.600	54.00	15.33	150	359	AV	PASS
8206.17	52.2	49.08	-3.130	74.00	24.92	150	359	PK	PASS
13275.84	38.5	43.76	5.240	54.00	10.24	150	204	AV	PASS
13477.35	47.6	52.31	4.710	74.00	21.69	150	99	PK	PASS

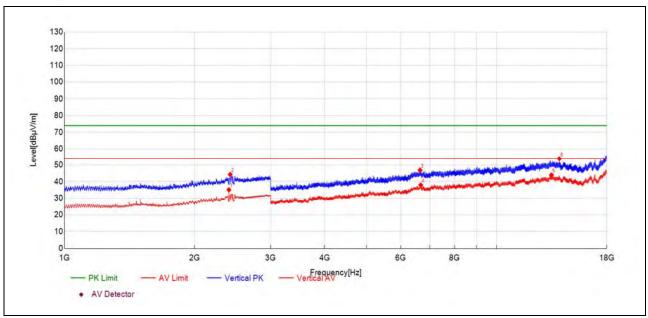




(Antenna Vertical, 30MHz to 1GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
31.46	64.7	31.95	-32.740	40.00	8.05	150	234	PK	PASS
57.69	57.5	27.36	-30.140	40.00	12.64	150	184	PK	PASS
85.97	51.4	17.85	-33.580	40.00	22.15	150	350	PK	PASS
160.08	49.5	16.78	-32.730	43.50	26.72	150	283	PK	PASS
193.07	49.1	19.48	-29.590	43.50	24.02	150	11	PK	PASS
262.13	47.3	19.42	-27.920	46.00	26.58	150	94	PK	PASS

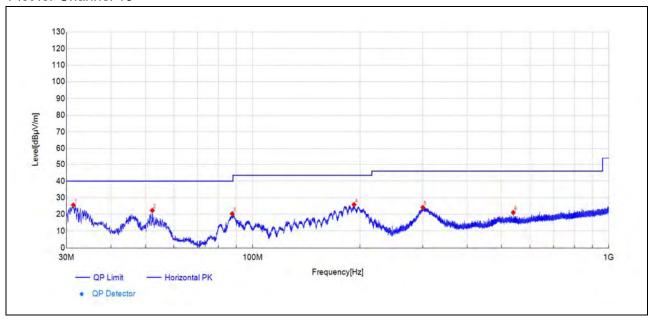




(Antenna Vertical, 1GHz to 18GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vordiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
2402.09	34.3	35.05	0.750	54.00	18.95	150	296	AV	NA
2418.09	43.4	44.30	0.860	74.00	29.70	150	194	PK	PASS
6651.12	50.7	46.94	-3.730	74.00	27.06	150	29	PK	PASS
6674.62	41.7	37.92	-3.810	54.00	16.08	150	325	AV	PASS
13397.85	39.2	44.00	4.760	54.00	10.00	150	354	AV	PASS
13973.87	48.7	53.93	5.260	74.00	20.07	150	135	PK	PASS

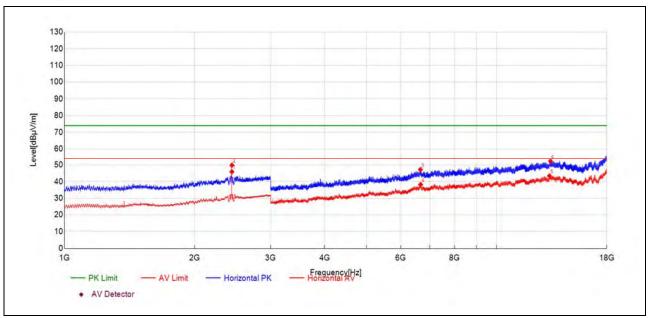




(Antenna Horizontal, 30MHz to 1GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiat
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
31.36	58.4	25.58	-32.780	40.00	14.42	150	11	PK	PASS
52.26	51.3	22.36	-28.900	40.00	17.64	150	11	PK	PASS
87.62	53.2	20.33	-32.890	40.00	19.67	150	50	PK	PASS
192.53	55.4	25.83	-29.600	43.50	17.67	150	271	PK	PASS
300.50	51.1	24.11	-26.960	46.00	21.89	150	291	PK	PASS
539.03	42.4	21.11	-21.250	46.00	24.89	150	311	PK	PASS

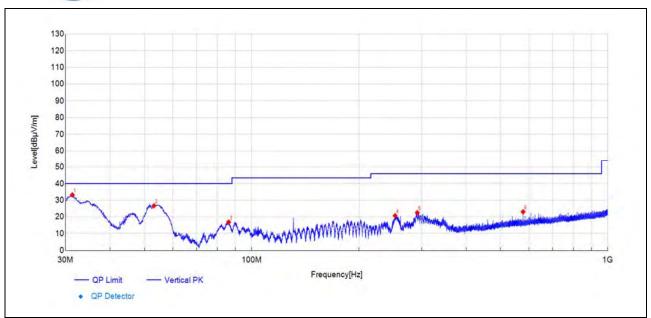




(Antenna Horizontal, 1GHz to 18GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
2439.88	45.0	45.96	1.010	54.00	8.04	150	180	AV	PASS
2440.32	48.9	49.86	1.010	74.00	24.14	150	180	PK	PASS
6665.12	51.0	47.24	-3.770	74.00	26.76	150	359	PK	PASS
6671.62	42.0	38.24	-3.790	54.00	15.76	150	150	AV	PASS
13256.34	38.4	43.41	5.030	54.00	10.59	150	273	AV	PASS
13331.34	47.1	52.31	5.250	74.00	21.69	150	29	PK	PASS

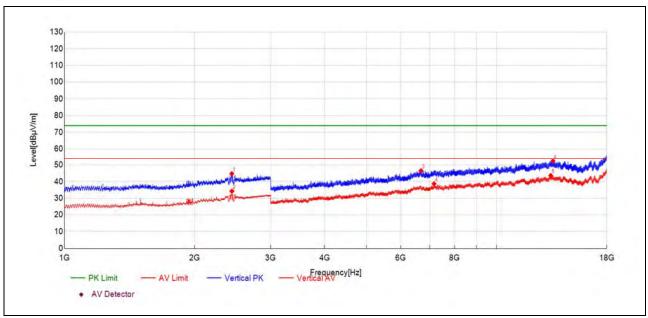




(Antenna Vertical, 30MHz to 1GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Verdict
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	verdict
31.36	66.0	33.22	-32.780	40.00	6.78	150	178	PK	PASS
53.14	55.7	26.66	-29.080	40.00	13.34	150	2	PK	PASS
86.17	50.4	16.85	-33.500	40.00	23.15	150	288	PK	PASS
252.72	48.8	20.70	-28.060	46.00	25.30	150	97	PK	PASS
291.62	49.7	22.52	-27.220	46.00	23.48	150	259	PK	PASS
578.17	43.6	23.09	-20.470	46.00	22.91	150	310	PK	PASS

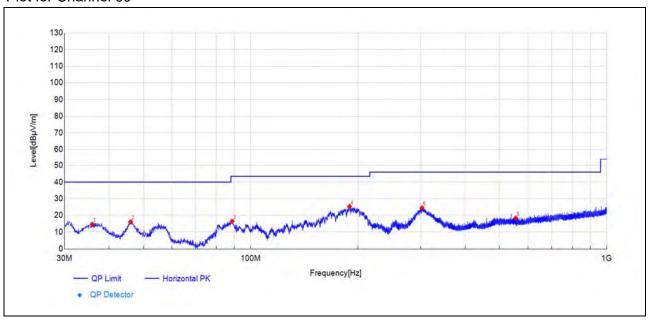




(Antenna Vertical, 1GHz to 18GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiat
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
2438.54	43.7	44.74	1.000	74.00	29.26	150	289	PK	PASS
2439.88	33.2	34.25	1.010	54.00	19.75	150	110	AV	PASS
6687.62	50.4	46.55	-3.840	74.00	27.45	150	44	PK	PASS
7165.64	42.5	38.70	-3.830	54.00	15.30	150	148	AV	PASS
13351.35	38.6	43.66	5.100	54.00	10.34	150	252	AV	PASS
13504.35	47.7	52.45	4.720	74.00	21.55	150	63	PK	PASS

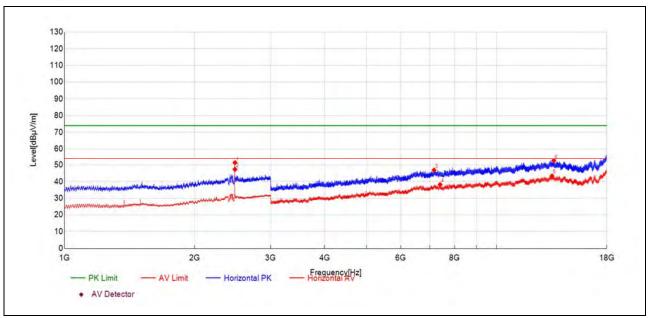




(Antenna Horizontal, 30MHz to 1GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
35.87	45.2	14.59	-30.630	40.00	25.41	150	11	PK	PASS
46.01	44.4	16.07	-28.320	40.00	23.93	150	98	PK	PASS
88.64	48.9	16.45	-32.470	43.50	27.05	150	208	PK	PASS
189.48	55.3	25.34	-29.990	43.50	18.16	150	258	PK	PASS
302.54	51.3	24.42	-26.910	46.00	21.58	150	268	PK	PASS
554.94	39.3	18.35	-20.930	46.00	27.65	150	78	PK	PASS

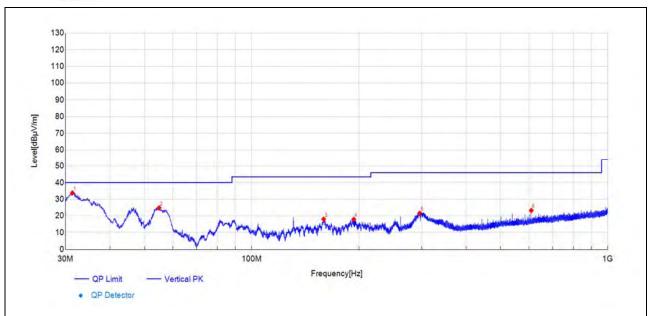




(Antenna Horizontal, 1GHz to 18GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vordiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
2479.88	50.5	51.41	0.920	74.00	22.59	150	177	PK	NA
2480.33	46.5	47.40	0.920	54.00	6.60	150	177	AV	NA
7167.14	50.7	46.89	-3.820	74.00	27.11	150	46	PK	PASS
7402.65	42.1	38.21	-3.850	54.00	15.79	150	135	AV	PASS
13437.85	38.6	43.36	4.730	54.00	10.64	150	28	AV	PASS
13568.35	47.9	52.71	4.790	74.00	21.29	150	239	PK	PASS

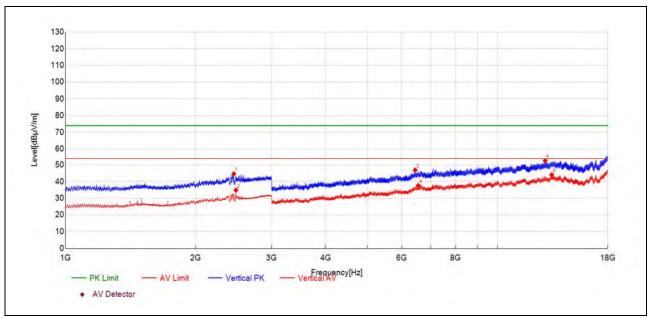




(Antenna Vertical, 30MHz to 1GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiat
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
31.36	66.6	33.80	-32.780	40.00	6.20	150	124	PK	PASS
54.93	54.2	24.78	-29.430	40.00	15.22	150	52	PK	PASS
159.21	50.8	18.02	-32.760	43.50	25.48	150	264	PK	PASS
193.45	47.5	17.90	-29.550	43.50	25.60	150	11	PK	PASS
296.28	48.6	21.59	-27.040	46.00	24.41	150	264	PK	PASS
609.41	42.9	23.27	-19.630	46.00	22.73	150	173	PK	PASS





(Antenna Vertical, 1GHz to 18GHz)

Fre.	Reading	Level	Factor	Limit	Margin	Height	Angle	Detector	Vondiet
(MHz)	[dBµV]	[dBµV/m]	[dB/m]	[dBµV/m]	[dB]	[cm]	[°]	Detector	Verdict
2452.77	43.6	44.67	1.060	74.00	29.33	150	167	PK	PASS
2480.33	34.0	34.89	0.920	54.00	19.11	150	117	AV	NA
6444.11	51.7	46.96	-4.770	74.00	27.04	150	254	PK	PASS
6553.62	42.0	37.64	-4.400	54.00	16.36	150	27	AV	PASS
12891.33	48.6	52.64	4.020	74.00	21.36	150	98	PK	PASS
13344.84	38.9	44.09	5.150	54.00	9.91	150	168	AV	PASS

——— END OF REPORT ———