FCC Test Report

Report No.:	RF180509C29
FCC ID:	RID-LM110H1
Test Model:	LM-110H1
Received Date:	Mar. 17, 2016
Test Date:	May 18 ~ Sep. 08, 2016 (Radiated emission above 1GHz, Antenna port conducted tests) May 22 ~ May 31, 2018 (Radiated emission below 1GHz, Power line conducted emission tests)
Issued Date:	Jun. 01, 2018
Applicant:	GlobalSat WorldCom Corporation
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Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF180509C29	Original release	Jun. 01, 2018

1 Certificate of Conformity

Product:	LoRa Wireless Module
Brand:	GlobalSat
Test Model:	LM-110H1
Sample Status:	Mass product
Applicant:	GlobalSat WorldCom Corporation
Test Date:	May 18 ~ Sep. 08, 2016 (Radiated emission above 1GHz, Antenna port conducted tests) May 22 ~ May 31, 2018 (Radiated emission below 1GHz, Power line conducted emission tests)
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) 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 RF characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Jun. 01, 2018

Suntee Liu / Specialist

Approved by : _____ , **Date:** Jun. 01, 2018

Bruce Chen / Project Engineer

2 Summary of Test Results

Hybrid Mode (125kHz Bandwidth, 64 channels)

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -17.17dB at 0.58010MHz.
15.247(a)(1)(i)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1)(i) / 15.247(f)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Frequency Hopping Sequence Spread Spectrum System	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Minimum Number of Hopping Channels	N/A	Refer to Note
15.247(a)(2)	500 kHz Minimum Bandwidth	N/A	Refer to Note
15.247(b)(2)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.7dB at 893.30MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(e) / 15.247(f)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

N/A: Not Applicable
Note: There is no requirement for this type of hybrid system to comply with the 500 kHz minimum bandwidth normally associated with a DTS transmission; and, there is no minimum number of hopping channels associated with this type of hybrid system.

Hybrid Mode (250kHz Bandwidth, 25 channels)

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -15.43dB at 0.57228MHz.
15.247(a)(1)(i)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1)(i) / 15.247(f)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Frequency Hopping Sequence Spread Spectrum System	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Minimum Number of Hopping Channels	N/A	Refer to Note
15.247(a)(2)	500 kHz Minimum Bandwidth	N/A	Refer to Note
15.247(b)(2)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -2.1dB at 31.94MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(e) / 15.247(f)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

N/A: Not Applicable

Note: There is no requirement for this type of hybrid system to comply with the 500 kHz minimum bandwidth normally associated with a DTS transmission; and, there is no minimum number of hopping channels associated with this type of hybrid system.

Hybrid Mode (500kHz Bandwidth, 25 channels)

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -11.95dB at 0.44527MHz.
15.247(a)(1)(i)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1)(i) / 15.247(f)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Frequency Hopping Sequence Spread Spectrum System	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Minimum Number of Hopping Channels	N/A	Refer to Note
15.247(a)(2)	500 kHz Minimum Bandwidth	N/A	Refer to Note
15.247(b)(2)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.4dB at 928.00MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(e) / 15.247(f)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

N/A: Not Applicable

Note: There is no requirement for this type of hybrid system to comply with the 500 kHz minimum bandwidth normally associated with a DTS transmission; and, there is no minimum number of hopping channels associated with this type of hybrid system.

Hybrid Mode (500kHz Bandwidth, 8 channels)

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -12.48dB at 0.44177MHz.
15.247(a)(1)(i)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1)(i) / 15.247(f)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Frequency Hopping Sequence Spread Spectrum System	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Minimum Number of Hopping Channels	N/A	Refer to Note
15.247(a)(2)	500 kHz Minimum Bandwidth	N/A	Refer to Note
15.247(b)(2)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -3.2dB at 1815.60MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(e) / 15.247(f)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

N/A: Not Applicable
Note: There is no requirement for this type of hybrid system to comply with the 500 kHz minimum bandwidth normally associated with a DTS transmission; and, there is no minimum number of hopping channels associated with this type of hybrid system.

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	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	LoRa Wireless Module	
Brand	GlobalSat	
Test Model	LM-110H1	
Sample Status	Mass product	
Power Supply Rating	5Vdc (host equipment)	
Modulation Type	FSK, GFSK, OOK	
Transfer Rate	21.9kbps	
Operating Frequency	902~928MHz	
Number of Channel	Hybrid Mode (125kHz Bandwidth, 64 channels)	64
	Hybrid Mode (250kHz Bandwidth, 25 channels)	25
	Hybrid Mode (500kHz Bandwidth, 25 channels)	25
	Hybrid Mode (500kHz Bandwidth, 8 channels)	8
Channel Spacing	Hybrid Mode (125kHz Bandwidth, 64 channels)	0.2MHz
	Hybrid Mode (250kHz Bandwidth, 25 channels)	1.6MHz, 0.7MHz, 0.6MHz
	Hybrid Mode (500kHz Bandwidth, 25 channels)	1.6MHz, 0.7MHz, 0.6MHz
	Hybrid Mode (500kHz Bandwidth, 8 channels)	1.6MHz
Output Power	Hybrid Mode (125kHz Bandwidth, 64 channels)	68.077mW
	Hybrid Mode (250kHz Bandwidth, 25 channels)	67.453mW
	Hybrid Mode (500kHz Bandwidth, 25 channels)	83.946mW
	Hybrid Mode (500kHz Bandwidth, 8 channels)	83.946mW
Antenna Type	Refer to Note	
Antenna Connector	Refer to Note	
Accessory Device	NA	
Cable Supplied	NA	

Note:

1. The EUT uses following antenna (support unit).

Antenna Type	Dipole	Antenna Connector	RP SMA
Antenna Gain (dBi)			
902MHz	915MHz	928MHz	
2.95	2.88	2.89	

* The maximum antenna gain is chosen for final test.

3.2 Description of Test Modes

64 channels are provided for Hybrid Mode (125kHz Bandwidth):

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.3	16	905.5	32	908.7	48	911.9
1	902.5	17	905.7	33	908.9	49	912.1
2	902.7	18	905.9	34	909.1	50	912.3
3	902.9	19	906.1	35	909.3	51	912.5
4	903.1	20	906.3	36	909.5	52	912.7
5	903.3	21	906.5	37	909.7	53	912.9
6	903.5	22	906.7	38	909.9	54	913.1
7	903.7	23	906.9	39	910.1	55	913.3
8	903.9	24	907.1	40	910.3	56	913.5
9	904.1	25	907.3	41	910.5	57	913.7
10	904.3	26	907.5	42	910.7	58	913.9
11	904.5	27	907.7	43	910.9	59	914.1
12	904.7	28	907.9	44	911.1	60	914.3
13	904.9	29	908.1	45	911.3	61	914.5
14	905.1	30	908.3	46	911.5	62	914.7
15	905.3	31	908.5	47	911.7	63	914.9

25 channels are provided for Hybrid Mode (250kHz & 500kHz Bandwidth):

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	903.0	7	914.2	14	921.5	21	925.7
1	904.6	8	915.8	15	922.1	22	926.3
2	906.2	9	917.4	16	922.7	23	926.9
3	907.8	10	919.0	17	923.3	24	927.5
4	909.4	11	919.7	18	923.9		
5	911.0	12	920.3	19	924.5		
6	912.6	13	920.9	20	925.1		

8 channels are provided for Hybrid Mode (500kHz Bandwidth):

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	903.0	2	906.2	4	909.4	6	912.6
1	904.6	3	907.8	5	911.0	7	914.2

3.2.1 Test Mode Applicability and Tested Channel Detail

Hybrid Mode (125kHz Bandwidth, 64 channels)

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement
RE<1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis and modulation type. The worst case was found when positioned on X-plane with FSK modulation.

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 63	0, 31, 63	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 63	0, 31, 63	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 63	0, 31, 63	FSK

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ 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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 63	0, 31, 63	FSK

Test Condition:

Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE≥1G	16 deg. C, 70% RH	120Vac, 60Hz	Nick Hsu
RE<1G	25 deg. C, 65% RH	120Vac, 60Hz	Greg Lin
PLC	23 deg. C, 66% RH	120Vac, 60Hz	Jones Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Leo Tsai

Hybrid Mode (250kHz Bandwidth, 25 channels)

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis and modulation type. The worst case was found when positioned on X-plane with FSK modulation.

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ 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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

Test Condition:

Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE≥1G	16 deg. C, 70% RH	120Vac, 60Hz	Nick Hsu
RE<1G	25 deg. C, 65% RH	120Vac, 60Hz	Greg Lin
PLC	23 deg. C, 66% RH	120Vac, 60Hz	Jones Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Leo Tsai

Hybrid Mode (500kHz Bandwidth, 25 channels)

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement
RE<1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis and modulation type. The worst case was found when positioned on X-plane with FSK modulation.

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ 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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 24	0, 7, 24	FSK

Test Condition:

Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE≥1G	16 deg. C, 70% RH 18 deg. C, 70% RH	120Vac, 60Hz	Nick Hsu
RE<1G	25 deg. C, 65% RH	120Vac, 60Hz	Greg Lin
PLC	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Leo Tsai

Hybrid Mode (500kHz Bandwidth, 8 channels)

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement
RE<1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis and modulation type. The worst case was found when positioned on X-plane with FSK modulation.

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 7	0, 3, 7	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 7	0, 3, 7	FSK

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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 7	0, 3, 7	FSK

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ 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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type
-	0 to 7	0, 3, 7	FSK

Test Condition:

Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE≥1G	16 deg. C, 70% RH 18 deg. C, 70% RH	120Vac, 60Hz	Nick Hsu
RE<1G	25 deg. C, 65% RH	120Vac, 60Hz	Han Wu Greg Lin
PLC	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Leo Tsai

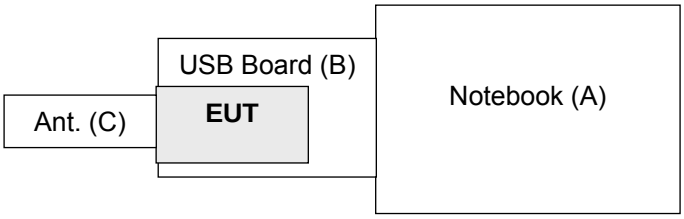
3.3 Description of Support Units

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.	Notebook	Lenovo	S430	MP-2DBFW	PD92230BNHU	-
B.	USB Board	GlobalSat	GS-EB-LM110H-01-V0.1	NA	NA	Provided by manufacturer
C.	Antenna	GlobalSat	98619ZRSX003-715	NA	NA	Provided by manufacturer

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

3.3.1 Configuration of System under 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 (15.247)
KDB 558074 D01 DTS Meas Guidance v04
FCC KDB Publication Number: 453039
ANSI C63.10:2013

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

4 Test Types and Results (Hybrid Mode (125kHz Bandwidth, 64 channels))

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

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. 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.

4.1.2 Test Instruments

Test date: May 18 ~ Sep. 08, 2016

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Apr. 18, 2016	Apr. 17, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 16, 2015	Aug. 15, 2016
			Aug. 16, 2016	Aug. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	9120D	209	Jan. 20, 2016	Jan. 19, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Preamplifier Agilent	8447D	2944A10738	Oct.18, 2015	Oct. 17, 2016
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2015	Aug. 21, 2016
			Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2015	Aug. 21, 2016
			Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2015	Aug. 21, 2016
			Aug. 22, 2016	Aug. 21, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2015	Jul. 08, 2016
			Jul. 09, 2016	Jul. 08, 2017
Power Sensor	MA2411B	0738171	Aug. 11, 2015	Aug. 10, 2016
			Aug. 11, 2016	Aug. 10, 2017

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

Test date: May 22 ~ May 31, 2018

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 11, 2018	Apr. 10, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 18, 2017	Aug. 17, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Dec. 12, 2017	Dec. 11, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Aug. 08, 2017	Aug. 07, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A01638	Feb. 22, 2018	Feb. 21, 2019
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 15, 2018	Jan. 14, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Aug. 08, 2017	Aug. 07, 2018
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 01, 2017	Jul. 31, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
4. The IC Site Registration No. is IC 7450F-9.

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 above 30MHz

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 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 detect 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:

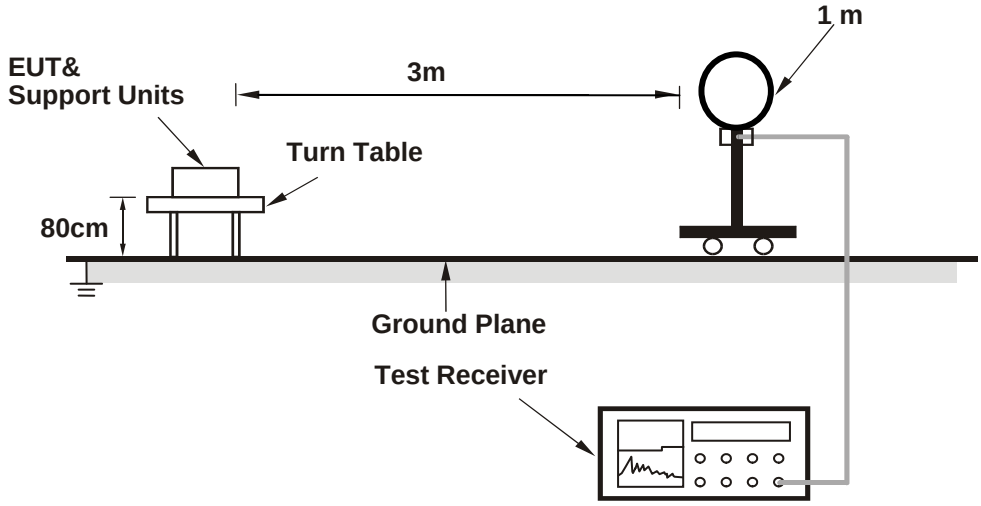
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

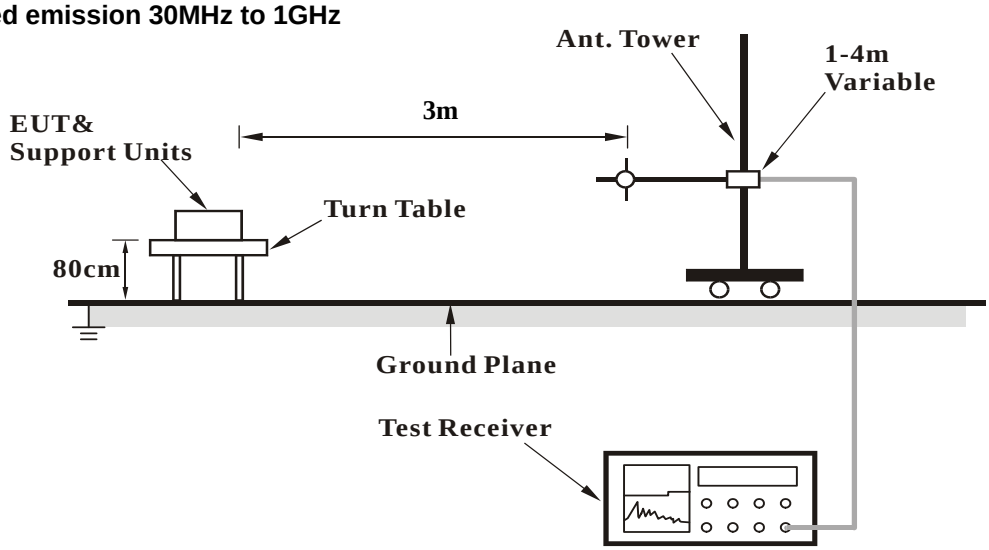
No deviation.

4.1.5 Test Setup

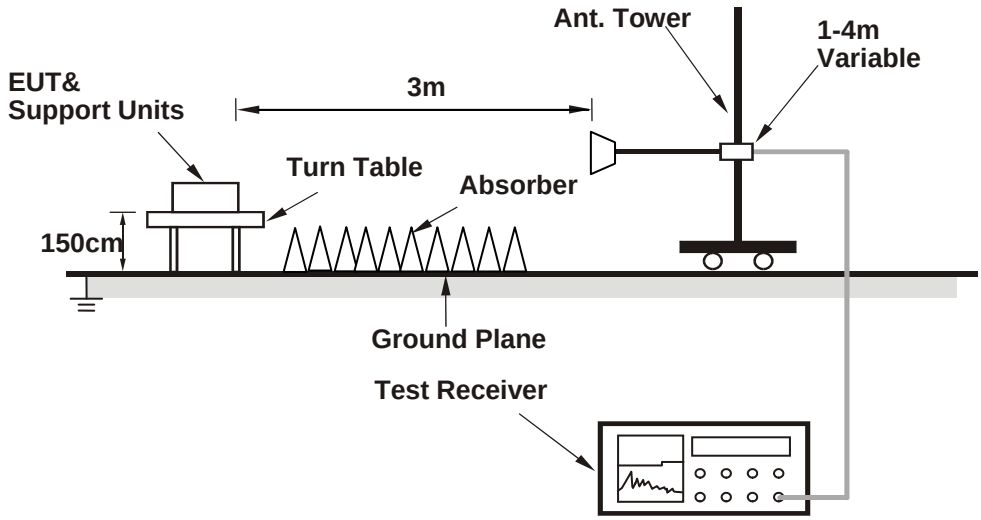
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	902.00	68.1 PK	87.9	-19.8	1.54 H	117	39.9	28.2
2	902.00	58.2 AV	86.6	-28.4	1.54 H	117	30.0	28.2
3	*902.30	117.9 PK			1.54 H	117	89.6	28.3
4	*902.30	116.6 AV			1.54 H	117	88.3	28.3
5	1804.60	51.5 PK	74.0	-22.5	2.03 H	310	55.0	-3.5
6	1804.60	50.0 AV	54.0	-4.0	2.03 H	310	53.5	-3.5
7	2706.90	46.3 PK	74.0	-27.7	1.18 H	294	46.8	-0.5
8	2706.90	42.8 AV	54.0	-11.2	1.18 H	294	43.3	-0.5
9	3609.20	47.2 PK	74.0	-26.8	2.13 H	135	45.8	1.4
10	3609.20	41.0 AV	54.0	-13.0	2.13 H	135	39.6	1.4
11	4511.50	45.9 PK	74.0	-28.1	2.99 H	254	41.5	4.4
12	4511.50	36.1 AV	54.0	-17.9	2.99 H	254	31.7	4.4
13	5413.80	51.0 PK	74.0	-23.0	2.99 H	276	44.2	6.8
14	5413.80	44.9 AV	54.0	-9.1	2.99 H	276	38.1	6.8
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	902.00	70.3 PK	90.1	-19.8	1.08 V	306	42.1	28.2
2	902.00	60.2 AV	88.8	-28.6	1.08 V	306	32.0	28.2
3	*902.30	120.1 PK			1.08 V	306	91.8	28.3
4	*902.30	118.8 AV			1.08 V	306	90.5	28.3
5	1804.60	51.8 PK	74.0	-22.2	1.48 V	303	55.3	-3.5
6	1804.60	50.2 AV	54.0	-3.8	1.48 V	303	53.7	-3.5
7	2706.90	43.9 PK	74.0	-30.1	3.23 V	37	44.4	-0.5
8	2706.90	36.7 AV	54.0	-17.3	3.23 V	37	37.2	-0.5
9	3609.20	46.5 PK	74.0	-27.5	3.80 V	312	45.1	1.4
10	3609.20	39.3 AV	54.0	-14.7	3.80 V	312	37.9	1.4
11	4511.50	46.7 PK	74.0	-27.3	3.86 V	44	42.3	4.4
12	4511.50	36.5 AV	54.0	-17.5	3.86 V	44	32.1	4.4
13	5413.80	50.0 PK	74.0	-24.0	4.00 V	335	43.2	6.8
14	5413.80	43.0 AV	54.0	-11.0	4.00 V	335	36.2	6.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 31	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*908.50	118.3 PK			1.52 H	112	90.0	28.3
2	*908.50	117.0 AV			1.52 H	112	88.7	28.3
3	1817.00	50.7 PK	74.0	-23.3	1.99 H	313	54.2	-3.5
4	1817.00	49.1 AV	54.0	-4.9	1.99 H	313	52.6	-3.5
5	2725.50	43.8 PK	74.0	-30.2	1.08 H	303	44.2	-0.4
6	2725.50	38.6 AV	54.0	-15.4	1.08 H	303	39.0	-0.4
7	3634.00	46.1 PK	74.0	-27.9	2.23 H	137	44.5	1.6
8	3634.00	39.6 AV	54.0	-14.4	2.23 H	137	38.0	1.6
9	4542.50	45.6 PK	74.0	-28.4	2.79 H	256	41.1	4.5
10	4542.50	35.7 AV	54.0	-18.3	2.79 H	256	31.2	4.5
11	5451.00	50.0 PK	74.0	-24.0	2.79 H	277	43.1	6.9
12	5451.00	42.7 AV	54.0	-11.3	2.79 H	277	35.8	6.9
13	7268.00	57.2 PK	74.0	-16.8	2.41 H	281	44.4	12.8
14	7268.00	51.3 AV	54.0	-2.7	2.41 H	281	38.5	12.8
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	*908.50	119.7 PK			1.05 V	301	91.4	28.3
2	*908.50	118.3 AV			1.05 V	301	90.0	28.3
3	1817.00	49.7 PK	74.0	-24.3	1.00 V	305	53.2	-3.5
4	1817.00	48.1 AV	54.0	-5.9	1.00 V	305	51.6	-3.5
5	2725.50	43.9 PK	74.0	-30.1	3.21 V	39	44.3	-0.4
6	2725.50	37.1 AV	54.0	-16.9	3.21 V	39	37.5	-0.4
7	3634.00	46.3 PK	74.0	-27.7	3.74 V	310	44.7	1.6
8	3634.00	38.8 AV	54.0	-15.2	3.74 V	310	37.2	1.6
9	4542.50	46.3 PK	74.0	-27.7	3.68 V	40	41.8	4.5
10	4542.50	35.7 AV	54.0	-18.3	3.68 V	40	31.2	4.5
11	5451.00	49.8 PK	74.0	-24.2	3.92 V	334	42.9	6.9
12	5451.00	40.6 AV	54.0	-13.4	3.92 V	334	33.7	6.9
13	7268.00	54.7 PK	74.0	-19.3	3.92 V	310	41.9	12.8
14	7268.00	47.0 AV	54.0	-7.0	3.92 V	310	34.2	12.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 63	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*914.90	118.6 PK			1.49 H	113	90.2	28.4
2	*914.90	117.4 AV			1.49 H	113	89.0	28.4
3	928.00	57.3 PK	88.6	-31.3	1.49 H	113	28.6	28.7
4	928.00	46.7 AV	87.4	-40.7	1.49 H	113	18.0	28.7
5	1829.80	50.1 PK	74.0	-23.9	1.96 H	309	53.7	-3.6
6	1829.80	48.4 AV	54.0	-5.6	1.96 H	309	52.0	-3.6
7	2744.70	43.3 PK	74.0	-30.7	1.01 H	299	43.7	-0.4
8	2744.70	36.9 AV	54.0	-17.1	1.01 H	299	37.3	-0.4
9	3659.60	46.7 PK	74.0	-27.3	1.90 H	136	45.0	1.7
10	3659.60	39.2 AV	54.0	-14.8	1.90 H	136	37.5	1.7
11	4574.50	46.1 PK	74.0	-27.9	2.68 H	260	41.5	4.6
12	4574.50	35.5 AV	54.0	-18.5	2.68 H	260	30.9	4.6
13	5489.40	50.3 PK	74.0	-23.7	2.88 H	277	43.3	7.0
14	5489.40	42.8 AV	54.0	-11.2	2.88 H	277	35.8	7.0
15	7319.20	55.8 PK	74.0	-18.2	2.34 H	279	43.0	12.8
16	7319.20	48.4 AV	54.0	-5.6	2.34 H	279	35.6	12.8
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	*914.90	119.6 PK			1.07 V	303	91.2	28.4
2	*914.90	118.3 AV			1.07 V	303	89.9	28.4
3	928.00	58.0 PK	89.6	-31.6	1.07 V	303	29.3	28.7
4	928.00	46.7 AV	88.3	-41.6	1.07 V	303	18.0	28.7
5	1829.80	51.5 PK	74.0	-22.5	1.21 V	331	55.1	-3.6
6	1829.80	50.1 AV	54.0	-3.9	1.21 V	331	53.7	-3.6
7	2744.70	42.3 PK	74.0	-31.7	2.05 V	90	42.7	-0.4
8	2744.70	35.8 AV	54.0	-18.2	2.05 V	90	36.2	-0.4
9	3659.60	46.1 PK	74.0	-27.9	3.30 V	266	44.4	1.7
10	3659.60	38.2 AV	54.0	-15.8	3.30 V	266	36.5	1.7
11	4574.50	46.6 PK	74.0	-27.4	3.02 V	264	42.0	4.6
12	4574.50	35.8 AV	54.0	-18.2	3.02 V	264	31.2	4.6
13	5489.40	49.2 PK	74.0	-24.8	2.93 V	289	42.2	7.0
14	5489.40	40.6 AV	54.0	-13.4	2.93 V	289	33.6	7.0
15	7319.20	57.4 PK	74.0	-16.6	2.55 V	288	44.6	12.8
16	7319.20	51.4 AV	54.0	-2.6	2.55 V	288	38.6	12.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz worst-case data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	34.85	24.2 QP	40.0	-15.8	1.50 H	20	38.9	-14.7
2	154.16	15.3 QP	43.5	-28.2	1.50 H	131	28.5	-13.2
3	365.62	18.1 QP	46.0	-27.9	1.00 H	196	29.5	-11.4
4	628.49	22.6 QP	46.0	-23.4	1.00 H	26	29.4	-6.8
5	837.04	26.1 QP	46.0	-19.9	1.25 H	246	29.5	-3.4
6	935.01	27.3 QP	46.0	-18.7	1.50 H	126	29.1	-1.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.85	29.4 QP	40.0	-10.6	1.25 V	12	44.1	-14.7
2	146.40	26.1 QP	43.5	-17.4	1.00 V	72	39.6	-13.5
3	293.84	27.0 QP	46.0	-19.0	1.50 V	111	39.5	-12.5
4	596.48	22.8 QP	46.0	-23.2	1.00 V	5	30.2	-7.4
5	715.79	35.3 QP	46.0	-10.7	1.25 V	59	40.8	-5.5
6	894.27	42.4 QP	46.0	-3.6	1.50 V	33	45.0	-2.6

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

CHANNEL	TX Channel 31	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	30.97	34.6 QP	40.0	-5.4	1.00 H	12	49.6	-15.0
2	145.43	15.9 QP	43.5	-27.6	1.25 H	212	29.5	-13.6
3	445.16	20.1 QP	46.0	-25.9	1.50 H	83	30.0	-9.9
4	603.27	22.5 QP	46.0	-23.5	1.50 H	79	29.7	-7.2
5	716.76	35.8 QP	46.0	-10.2	1.25 H	121	41.3	-5.5
6	992.24	28.1 QP	54.0	-25.9	1.25 H	223	29.1	-1.0
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	36.79	26.5 QP	40.0	-13.5	1.50 V	18	41.0	-14.5
2	145.43	25.3 QP	43.5	-18.2	1.25 V	63	38.9	-13.6
3	292.87	27.9 QP	46.0	-18.1	1.00 V	108	40.3	-12.4
4	473.29	21.0 QP	46.0	-25.0	1.00 V	63	30.5	-9.5
5	746.83	25.6 QP	46.0	-20.4	1.25 V	43	30.3	-4.7
6	**893.30**	**44.3 QP**	**46.0**	**-1.7**	**1.00 V**	**159**	**46.9**	**-2.6**

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

CHANNEL	TX Channel 63	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	30.97	31.8 QP	40.0	-8.2	1.25 H	80	46.8	-15.0
2	105.66	28.1 QP	43.5	-15.4	1.50 H	63	45.3	-17.2
3	148.34	22.0 QP	43.5	-21.5	1.25 H	116	35.3	-13.3
4	353.01	18.5 QP	46.0	-27.5	1.00 H	72	30.1	-11.6
5	713.85	35.1 QP	46.0	-10.9	1.00 H	76	40.7	-5.6
6	947.62	29.3 QP	46.0	-16.7	1.50 H	53	31.0	-1.7
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	35.82	34.3 QP	40.0	-5.7	1.50 V	3	49.0	-14.7
2	145.43	25.3 QP	43.5	-18.2	1.25 V	60	38.9	-13.6
3	292.87	26.9 QP	46.0	-19.1	1.25 V	125	39.3	-12.4
4	408.30	20.7 QP	46.0	-25.3	1.50 V	194	31.4	-10.7
5	715.79	25.5 QP	46.0	-20.5	1.00 V	7	31.0	-5.5
6	967.02	27.8 QP	54.0	-26.2	1.50 V	206	29.2	-1.4

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

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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 06, 2018	Mar. 05, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

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.

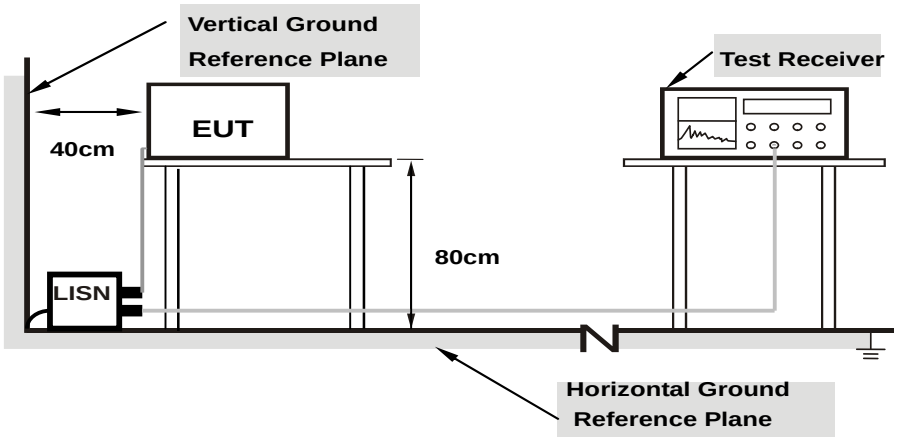
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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 Condition

Same as 4.1.6.

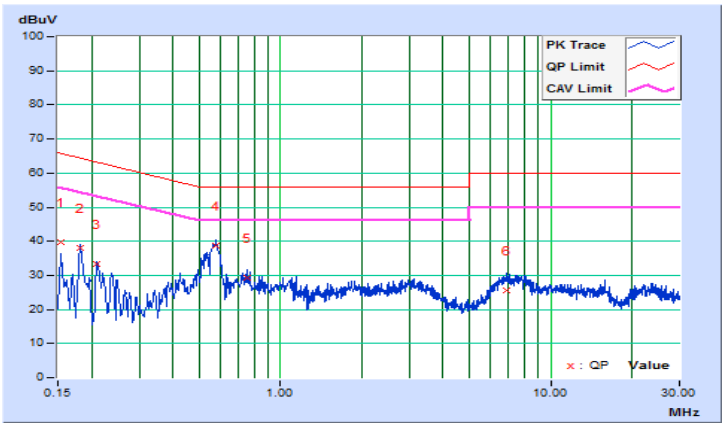
4.2.7 Test Results

Channel	TX Channel 0	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.09	29.71	16.74	39.80	26.83	65.79	55.79	-25.99	-28.96
2	0.18122	10.10	27.97	14.72	38.07	24.82	64.43	54.43	-26.36	-29.61
3	0.20893	10.10	23.22	10.43	33.32	20.53	63.25	53.25	-29.93	-32.72
4	**0.58010**	**10.11**	**28.72**	**21.02**	**38.83**	**31.13**	**56.00**	**46.00**	**-17.17**	**-14.87**
5	0.75585	10.12	19.10	10.72	29.22	20.84	56.00	46.00	-26.78	-25.16
6	6.86738	10.45	15.12	9.81	25.57	20.26	60.00	50.00	-34.43	-29.74

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.

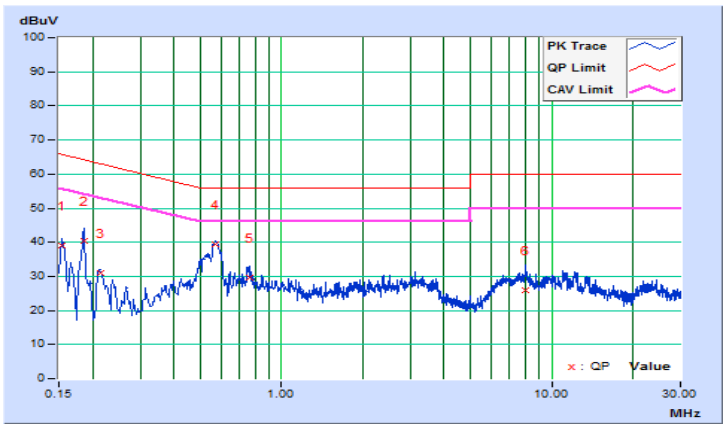


Channel	TX Channel 0	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.09	29.03	16.71	39.12	26.80	65.79	55.79	-26.67	-28.99
2	0.18519	10.09	30.28	13.30	40.37	23.39	64.25	54.25	-23.88	-30.86
3	0.21282	10.09	20.77	7.63	30.86	17.72	63.09	53.09	-32.23	-35.37
4	0.56866	10.11	29.14	20.74	39.25	30.85	56.00	46.00	-16.75	-15.15
5	0.76386	10.12	19.53	10.80	29.65	20.92	56.00	46.00	-26.35	-25.08
6	8.03647	10.46	15.32	10.22	25.78	20.68	60.00	50.00	-34.22	-29.32

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.

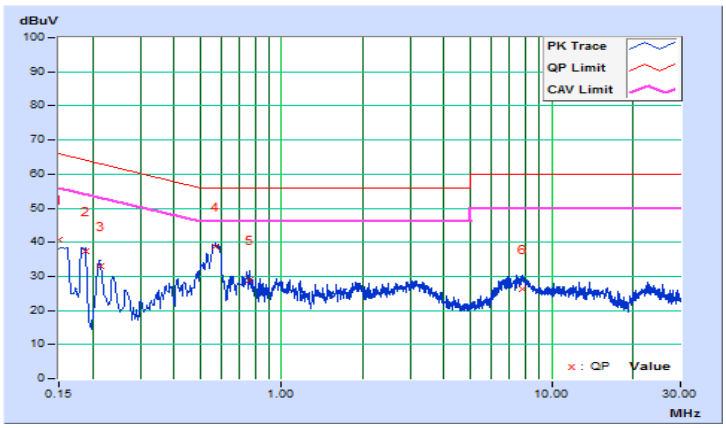


Channel	TX Channel 31	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	30.52	20.83	40.61	30.92	66.00	56.00	-25.39	-25.08
2	0.18853	10.10	27.40	9.97	37.50	20.07	64.10	54.10	-26.60	-34.03
3	0.21282	10.10	23.05	10.05	33.15	20.15	63.09	53.09	-29.94	-32.94
4	0.56866	10.11	28.47	19.46	38.58	29.57	56.00	46.00	-17.42	-16.43
5	0.76386	10.12	18.74	10.42	28.86	20.54	56.00	46.00	-27.14	-25.46
6	7.76668	10.50	15.81	10.08	26.31	20.58	60.00	50.00	-33.69	-29.42

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.

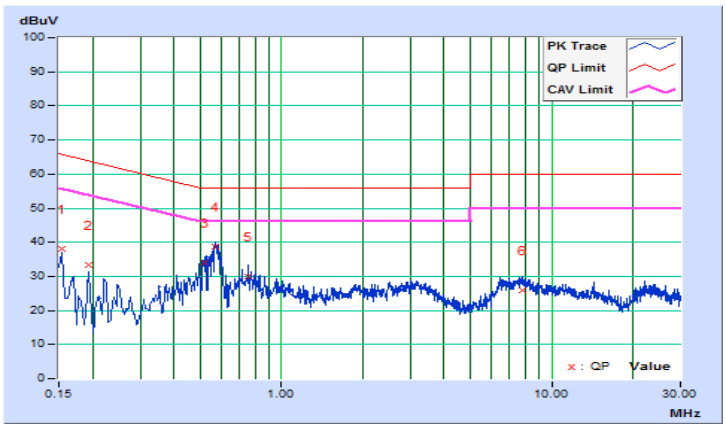


Channel	TX Channel 31	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.09	28.07	16.13	38.16	26.22	65.79	55.79	-27.63	-29.57
2	0.19301	10.09	23.28	2.68	33.37	12.77	63.91	53.91	-30.54	-41.14
3	0.52405	10.11	23.93	14.52	34.04	24.63	56.00	46.00	-21.96	-21.37
4	0.56837	10.11	28.58	20.19	38.69	30.30	56.00	46.00	-17.31	-15.70
5	0.75605	10.12	19.84	10.63	29.96	20.75	56.00	46.00	-26.04	-25.25
6	7.76272	10.45	15.48	10.00	25.93	20.45	60.00	50.00	-34.07	-29.55

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.

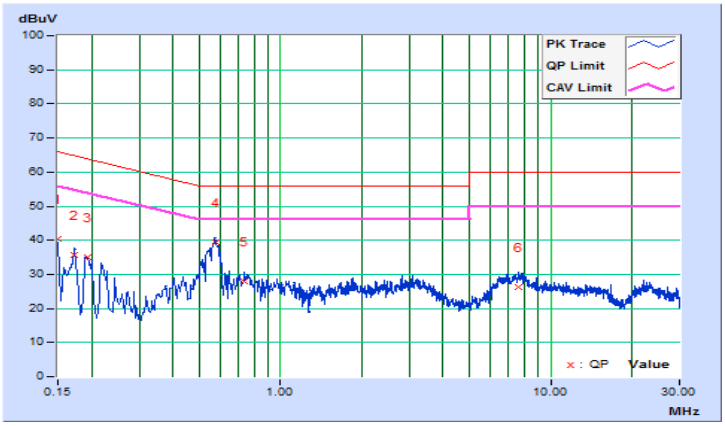


Channel	TX Channel 63	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	30.29	20.38	40.38	30.47	66.00	56.00	-25.62	-25.53
2	0.17328	10.10	25.55	11.40	35.65	21.50	64.80	54.80	-29.15	-33.30
3	0.19255	10.10	25.02	6.06	35.12	16.16	63.93	53.93	-28.81	-37.77
4	0.57317	10.11	29.15	20.69	39.26	30.80	56.00	46.00	-16.74	-15.20
5	0.73650	10.12	17.90	10.09	28.02	20.21	56.00	46.00	-27.98	-25.79
6	7.62201	10.49	15.77	10.62	26.26	21.11	60.00	50.00	-33.74	-28.89

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.

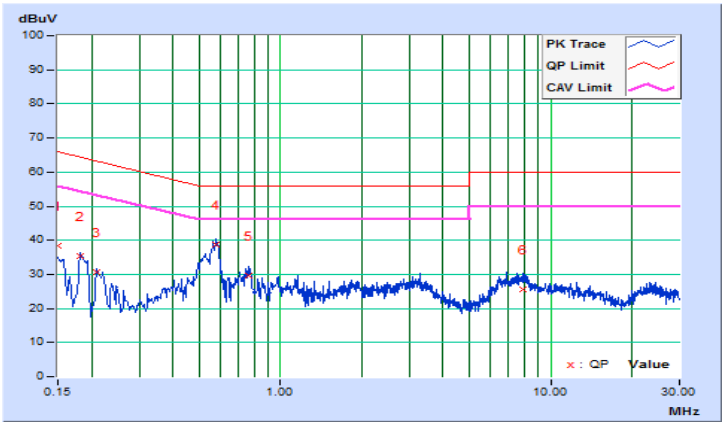


Channel	TX Channel 63	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	28.38	18.51	38.47	28.60	66.00	56.00	-27.53	-27.40
2	0.18128	10.09	25.16	11.41	35.25	21.50	64.43	54.43	-29.18	-32.93
3	0.20893	10.09	20.60	8.82	30.69	18.91	63.25	53.25	-32.56	-34.34
4	0.57620	10.11	28.70	20.55	38.81	30.66	56.00	46.00	-17.19	-15.34
5	0.75996	10.12	19.56	10.76	29.68	20.88	56.00	46.00	-26.32	-25.12
6	7.93090	10.45	15.16	10.37	25.61	20.82	60.00	50.00	-34.39	-29.18

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.

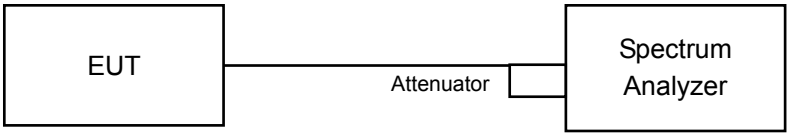


4.3 Number of Hopping Frequency Used

4.3.1 Limits of Hopping Frequency Used Measurement

There is no minimum number of hopping channels associated with this type of hybrid system.

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

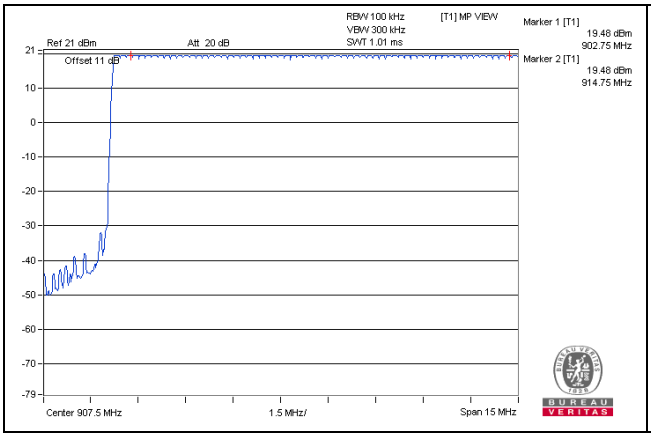
a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
d. Set the SA on View mode and then plot the result on SA screen.
e. Repeat above procedures until all frequencies measured were complete.

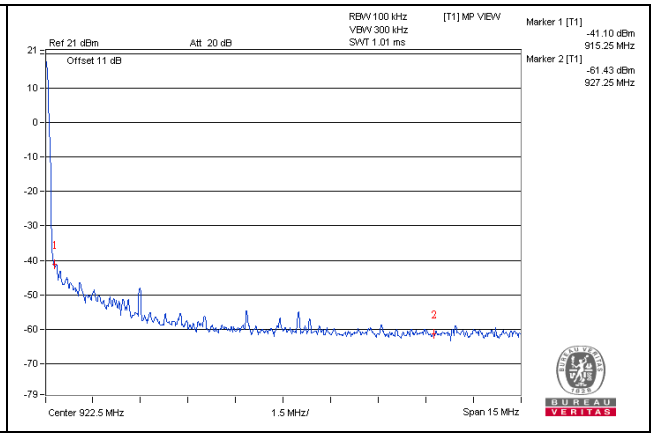
4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 Test Results

There are 64 hopping frequencies in the hybrid mode.



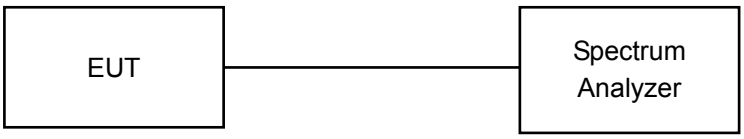


4.4 Dwell Time on Each Channel

4.4.1 Limits of Dwell Time on Each Channel Measurement

A hybrid system must comply with a 0.4 second/channel maximum dwell time when the hopping function is turned on.

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. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
e. Repeat above procedures until all different time-slot modes have been completed.

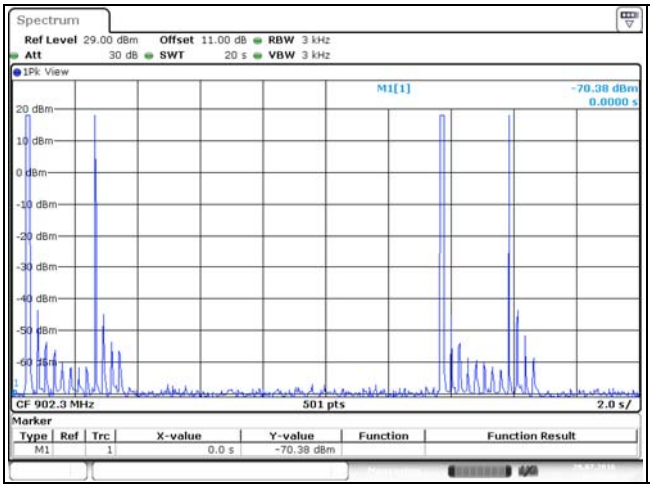
4.4.5 Deviation from Test Standard

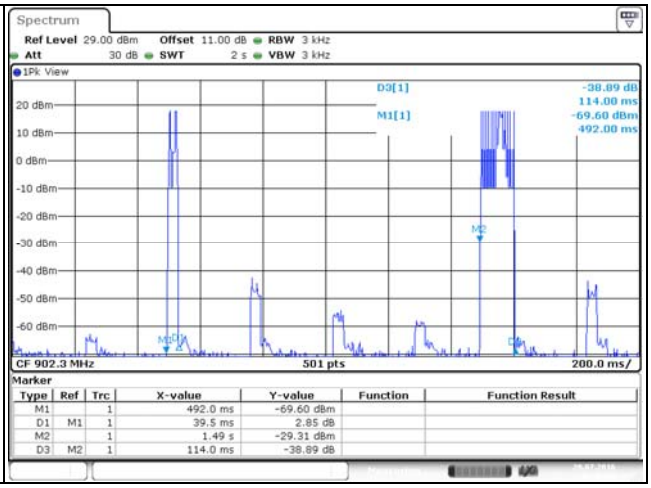
No deviation.

4.4.6 Test Results

Number of transmission in a time period	Length of transmission time (msec)	Result (msec)	Limit (msec)
2 times	39.5+114	153.5	400

Note: Test plots of the transmitting time slot are shown on following.



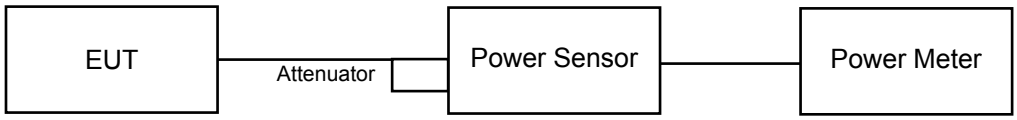


4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 902-928 MHz bands: 1 Watt (30dBm)

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

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Pass / Fail
0	902.3	67.764	18.31	30	Pass
31	908.5	67.920	18.32	30	Pass
63	914.9	**68.077**	18.33	30	Pass

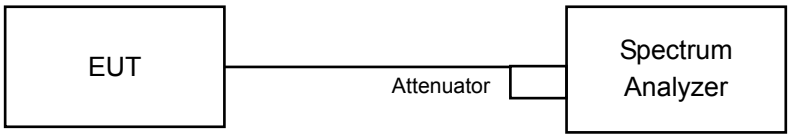
4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

A hybrid system must comply with the power density standard of 8 dBm in any 3 kHz band when the frequency hopping function is turned off

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. Set instrument center frequency to DTS channel center frequency.
b. Set span to at least 1.5 times the OBW.
c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set VBW ≥3 x RBW.
e. Detector = power averaging (RMS) or sample detector (when RMS not available).
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Employ trace averaging (RMS) mode over a minimum of 100 traces.
i. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

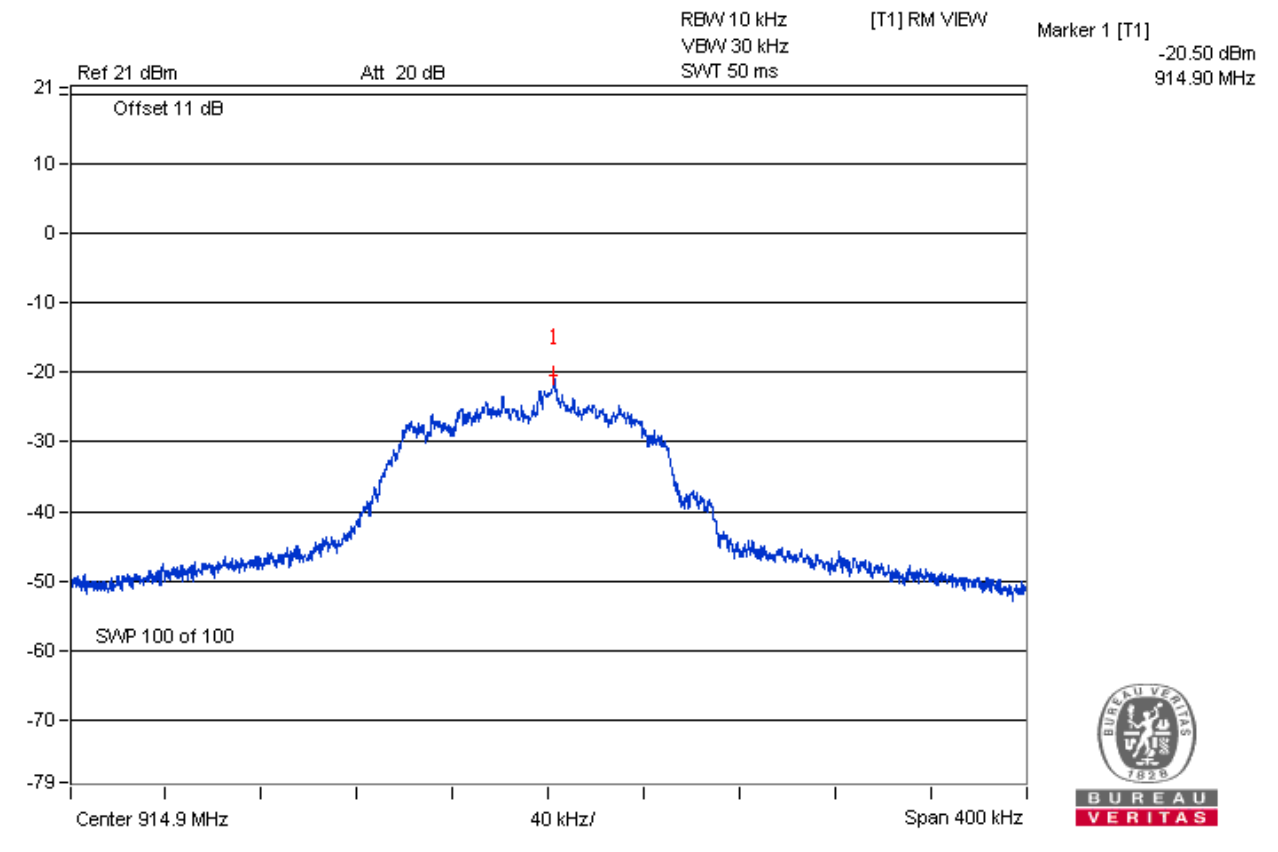
4.6.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.6.7 Test Results

Channel	Freq. (MHz)	PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	902.3	-23.28	8	Pass
31	908.5	-23.65	8	Pass
63	914.9	-20.50	8	Pass

Spectrum Plot of Worst Value

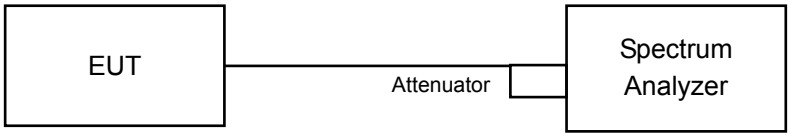


4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out Of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

Measurement Procedure REF

a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

Measurement Procedure OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum amplitude level.

4.7.5 Deviation from Test Standard

No deviation.

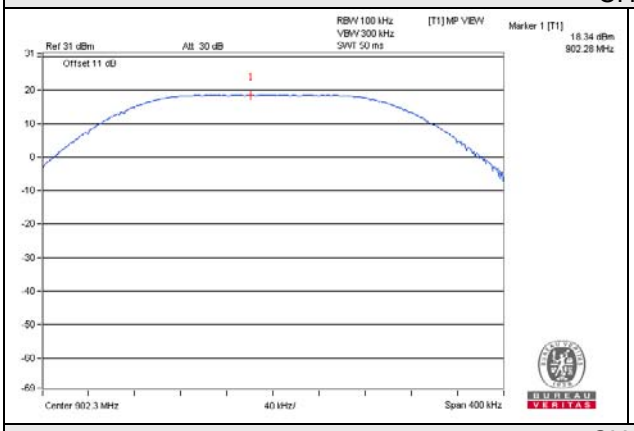
4.7.6 EUT Operating Condition

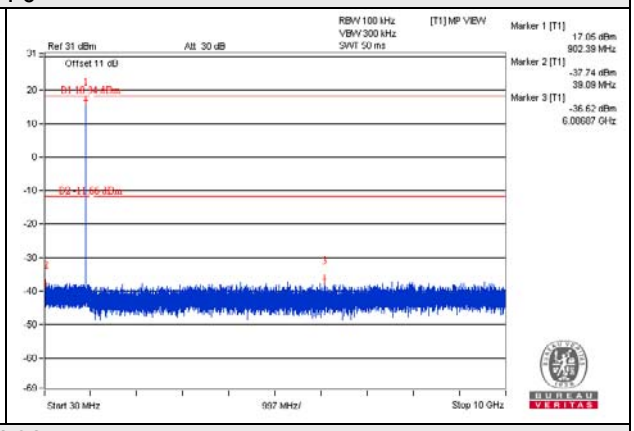
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.7.7 Test Results

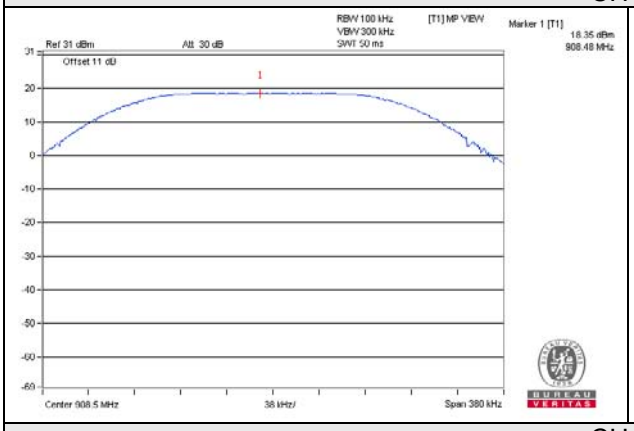
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

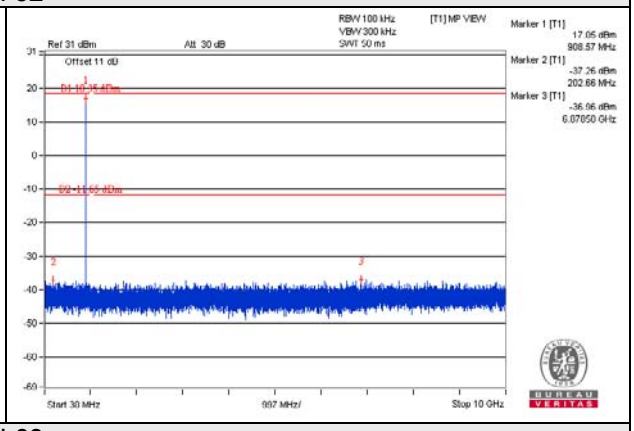
CH 0



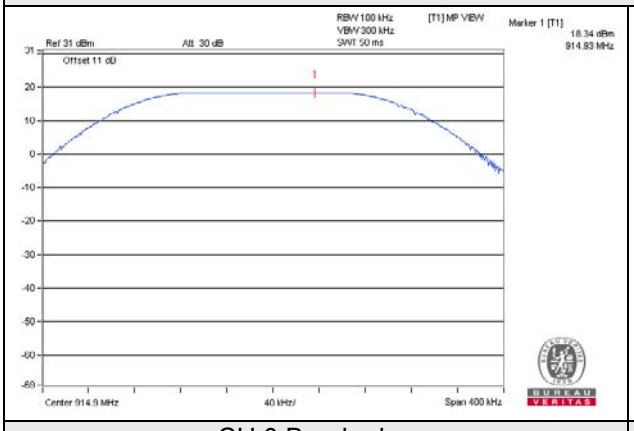


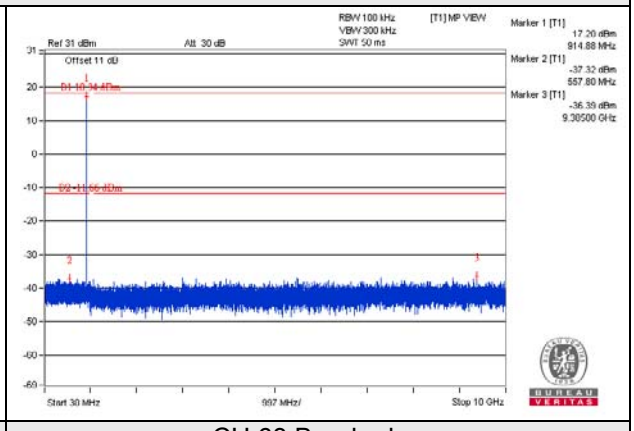
CH 32



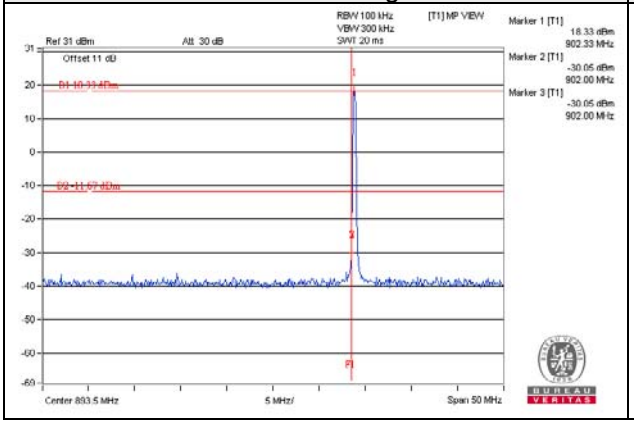


CH 63

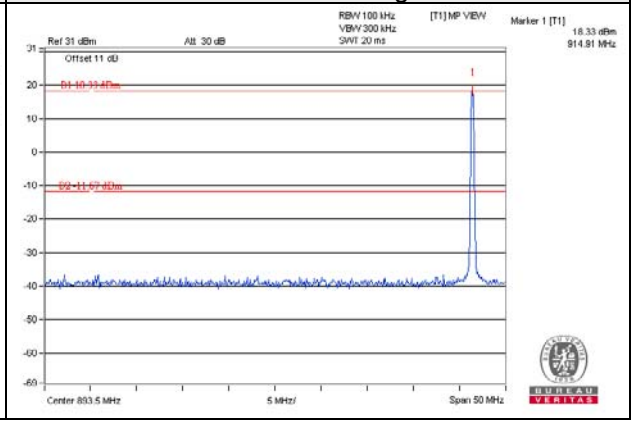




CH 0 Band edge



CH 63 Band edge



5 Test Types and Results (Hybrid Mode (250kHz Bandwidth, 25 channels))

5.1 Radiated Emission and Bandedge Measurement

5.1.1 Limits of Radiated Emission and Bandedge Measurement

Same as 4.1.1.

5.1.2 Test Instruments

Same as 4.1.2.

5.1.3 Test Procedures

Same as 4.1.3.

5.1.4 Deviation from Test Standard

No deviation.

5.1.5 Test Setup

Same as 4.1.5.

5.1.6 EUT Operating Conditions

Same as 4.1.6.

5.1.7 Test Results

Above 1GHz Data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	902.00	58.3 PK	87.3	-29.0	1.60 H	40	30.1	28.2
2	902.00	49.7 AV	86.4	-36.7	1.60 H	40	21.5	28.2
3	*903.00	117.3 PK			1.60 H	40	89.0	28.3
4	*903.00	116.4 AV			1.60 H	40	88.1	28.3
5	1806.00	47.6 PK	87.3	-39.7	2.52 H	113	51.1	-3.5
6	1806.00	44.7 AV	86.4	-41.7	2.52 H	113	48.2	-3.5
7	2709.00	47.4 PK	74.0	-26.6	2.37 H	165	47.9	-0.5
8	2709.00	42.9 AV	54.0	-11.1	2.37 H	165	43.4	-0.5
9	3612.00	46.8 PK	74.0	-27.2	1.26 H	28	45.4	1.4
10	3612.00	37.1 AV	54.0	-16.9	1.26 H	28	35.7	1.4
11	4515.00	49.5 PK	74.0	-24.5	1.18 H	17	45.1	4.4
12	4515.00	41.4 AV	54.0	-12.6	1.18 H	17	37.0	4.4
13	5418.00	49.7 PK	74.0	-24.3	1.52 H	355	42.9	6.8
14	5418.00	38.2 AV	54.0	-15.8	1.52 H	355	31.4	6.8
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	902.00	60.2 PK	90.0	-29.8	1.09 V	304	32.0	28.2
2	902.00	49.9 AV	89.0	-39.1	1.09 V	304	21.7	28.2
3	*903.00	120.0 PK			1.09 V	304	91.7	28.3
4	*903.00	119.0 AV			1.09 V	304	90.7	28.3
5	1806.00	55.7 PK	90.0	-34.3	2.26 V	284	59.2	-3.5
6	1806.00	54.5 AV	89.0	-34.5	2.26 V	284	58.0	-3.5
7	2709.00	48.1 PK	74.0	-25.9	1.47 V	303	48.6	-0.5
8	2709.00	45.2 AV	54.0	-8.8	1.47 V	303	45.7	-0.5
9	3612.00	46.0 PK	74.0	-28.0	2.27 V	119	44.6	1.4
10	3612.00	35.0 AV	54.0	-19.0	2.27 V	119	33.6	1.4
11	4515.00	50.3 PK	74.0	-23.7	1.09 V	65	45.9	4.4
12	4515.00	43.2 AV	54.0	-10.8	1.09 V	65	38.8	4.4
13	5418.00	48.9 PK	74.0	-25.1	1.93 V	335	42.1	6.8
14	5418.00	37.2 AV	54.0	-16.8	1.93 V	335	30.4	6.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 7	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*914.20	118.5 PK			1.48 H	111	90.0	28.5
2	*914.20	117.5 AV			1.48 H	111	89.0	28.5
3	1828.40	44.0 PK	74.0	-30.0	2.40 H	97	47.6	-3.6
4	1828.40	39.3 AV	54.0	-14.7	2.40 H	97	42.9	-3.6
5	2742.60	44.2 PK	74.0	-29.8	2.57 H	153	44.5	-0.3
6	2742.60	37.7 AV	54.0	-16.3	2.57 H	153	38.0	-0.3
7	3656.80	45.5 PK	74.0	-28.5	1.14 H	42	43.8	1.7
8	3656.80	36.9 AV	54.0	-17.1	1.14 H	42	35.2	1.7
9	4571.00	47.8 PK	74.0	-26.2	1.36 H	0	43.1	4.7
10	4571.00	39.2 AV	54.0	-14.8	1.36 H	0	34.5	4.7
11	7313.60	54.5 PK	74.0	-19.5	1.97 H	280	41.5	13.0
12	7313.60	44.0 AV	54.0	-10.0	1.97 H	280	31.0	13.0
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	*914.20	119.0 PK			1.04 V	302	90.5	28.5
2	*914.20	118.0 AV			1.04 V	302	89.5	28.5
3	1828.40	49.1 PK	74.0	-24.9	2.40 V	304	52.7	-3.6
4	1828.40	47.4 AV	54.0	-6.6	2.40 V	304	51.0	-3.6
5	2742.60	45.7 PK	74.0	-28.3	1.68 V	295	46.0	-0.3
6	2742.60	40.8 AV	54.0	-13.2	1.68 V	295	41.1	-0.3
7	3656.80	45.8 PK	74.0	-28.2	1.40 V	262	44.1	1.7
8	3656.80	36.1 AV	54.0	-17.9	1.40 V	262	34.4	1.7
9	4571.00	47.1 PK	74.0	-26.9	1.12 V	55	42.4	4.7
10	4571.00	37.6 AV	54.0	-16.4	1.12 V	55	32.9	4.7
11	7313.60	57.4 PK	74.0	-16.6	3.39 V	262	44.4	13.0
12	7313.60	49.6 AV	54.0	-4.4	3.39 V	262	36.6	13.0

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 24	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*927.50	117.9 PK			1.50 H	111	89.3	28.6
2	*927.50	116.9 AV			1.50 H	111	88.3	28.6
3	928.00	75.0 PK	87.9	-12.9	1.50 H	111	46.3	28.7
4	928.00	71.2 AV	86.9	-15.7	1.50 H	111	42.5	28.7
5	1855.00	50.2 PK	74.0	-23.8	1.56 H	129	53.8	-3.6
6	1855.00	48.0 AV	54.0	-6.0	1.56 H	129	51.6	-3.6
7	2782.50	47.1 PK	74.0	-26.9	1.60 H	139	47.3	-0.2
8	2782.50	43.5 AV	54.0	-10.5	1.60 H	139	43.7	-0.2
9	3710.00	46.7 PK	74.0	-27.3	1.31 H	139	44.9	1.8
10	3710.00	38.9 AV	54.0	-15.1	1.31 H	139	37.1	1.8
11	4637.50	47.5 PK	74.0	-26.5	1.27 H	49	42.7	4.8
12	4637.50	38.0 AV	54.0	-16.0	1.27 H	49	33.2	4.8
13	7420.00	55.1 PK	74.0	-18.9	2.27 H	272	42.1	13.0
14	7420.00	46.0 AV	54.0	-8.0	2.27 H	272	33.0	13.0
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	*927.50	119.6 PK			1.04 V	299	91.0	28.6
2	*927.50	118.7 AV			1.04 V	299	90.1	28.6
3	928.00	76.1 PK	89.6	-13.5	1.04 V	299	47.4	28.7
4	928.00	72.7 AV	88.7	-16.0	1.04 V	299	44.0	28.7
5	1855.00	47.5 PK	74.0	-26.5	1.36 V	329	51.1	-3.6
6	1855.00	45.5 AV	54.0	-8.5	1.36 V	329	49.1	-3.6
7	2782.50	48.4 PK	74.0	-25.6	1.61 V	336	48.6	-0.2
8	2782.50	45.6 AV	54.0	-8.4	1.61 V	336	45.8	-0.2
9	3710.00	45.2 PK	74.0	-28.8	2.17 V	267	43.4	1.8
10	3710.00	35.5 AV	54.0	-18.5	2.17 V	267	33.7	1.8
11	4637.50	46.2 PK	74.0	-27.8	1.96 V	175	41.4	4.8
12	4637.50	34.3 AV	54.0	-19.7	1.96 V	175	29.5	4.8
13	7420.00	56.3 PK	74.0	-17.7	2.37 V	268	43.3	13.0
14	7420.00	46.7 AV	54.0	-7.3	2.37 V	268	33.7	13.0

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz worst-case data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	34.85	22.1 QP	40.0	-17.9	1.25 H	83	36.8	-14.7
2	129.91	14.1 QP	43.5	-29.4	1.00 H	59	28.9	-14.8
3	362.71	18.4 QP	46.0	-27.6	1.50 H	301	29.8	-11.4
4	588.72	21.9 QP	46.0	-24.1	1.25 H	228	29.5	-7.6
5	709.97	24.0 QP	46.0	-22.0	1.00 H	222	29.7	-5.7
6	927.25	27.3 QP	46.0	-18.7	1.25 H	188	29.3	-2.0
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	**31.94**	**37.9 QP**	**40.0**	**-2.1**	**1.25 V**	**175**	**52.8**	**-14.9**
2	145.43	23.3 QP	43.5	-20.2	1.50 V	88	36.9	-13.6
3	291.90	23.9 QP	46.0	-22.1	1.25 V	124	36.3	-12.4
4	543.13	21.0 QP	46.0	-25.0	1.25 V	196	29.8	-8.8
5	763.32	25.5 QP	46.0	-20.5	1.00 V	9	29.8	-4.3
6	931.13	27.7 QP	46.0	-18.3	1.50 V	172	29.5	-1.8

Remarks:

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

CHANNEL	TX Channel 7	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	30.00	33.5 QP	40.0	-6.5	1.00 H	198	48.6	-15.1
2	146.40	16.4 QP	43.5	-27.1	1.50 H	211	29.9	-13.5
3	351.07	17.1 QP	46.0	-28.9	1.25 H	209	28.7	-11.6
4	612.97	22.6 QP	46.0	-23.4	1.25 H	277	29.6	-7.0
5	749.74	25.2 QP	46.0	-20.8	1.00 H	267	29.9	-4.7
6	974.78	28.2 QP	54.0	-25.8	1.50 H	181	29.4	-1.2
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	37.76	33.8 QP	40.0	-6.2	1.00 V	301	48.2	-14.4
2	96.93	15.3 QP	43.5	-28.2	1.25 V	109	33.6	-18.3
3	297.72	22.8 QP	46.0	-23.2	1.00 V	109	35.2	-12.4
4	478.14	20.4 QP	46.0	-25.6	1.25 V	37	29.9	-9.5
5	717.73	24.7 QP	46.0	-21.3	1.50 V	9	30.2	-5.5
6	996.12	27.9 QP	54.0	-26.1	1.00 V	225	28.8	-0.9

Remarks:

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

CHANNEL	TX Channel 24	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	34.85	23.0 QP	40.0	-17.0	1.00 H	344	37.7	-14.7
2	159.01	15.6 QP	43.5	-27.9	1.50 H	267	28.8	-13.2
3	349.13	17.3 QP	46.0	-28.7	1.50 H	6	29.0	-11.7
4	548.95	21.6 QP	46.0	-24.4	1.00 H	187	30.3	-8.7
5	772.05	25.1 QP	46.0	-20.9	1.25 H	297	29.6	-4.5
6	926.28	27.4 QP	46.0	-18.6	1.00 H	335	29.4	-2.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	32.91	31.7 QP	40.0	-8.3	1.50 V	177	46.5	-14.8
2	146.40	23.6 QP	43.5	-19.9	1.00 V	71	37.1	-13.5
3	289.96	25.2 QP	46.0	-20.8	1.25 V	122	37.6	-12.4
4	609.09	22.8 QP	46.0	-23.2	1.50 V	124	29.8	-7.0
5	799.21	25.9 QP	46.0	-20.1	1.50 V	348	30.1	-4.2
6	985.45	28.6 QP	54.0	-25.4	1.00 V	159	29.8	-1.2

Remarks:

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

5.2 Conducted Emission Measurement

5.2.1 Limits of Conducted Emission Measurement

Same as 4.2.1.

5.2.2 Test Instruments

Same as 4.2.2.

5.2.3 Test Procedures

Same as 4.2.3.

5.2.4 Deviation from Test Standard

No deviation.

5.2.5 Test Setup

Same as 4.2.5.

5.2.6 EUT Operating Condition

Same as 4.1.6.

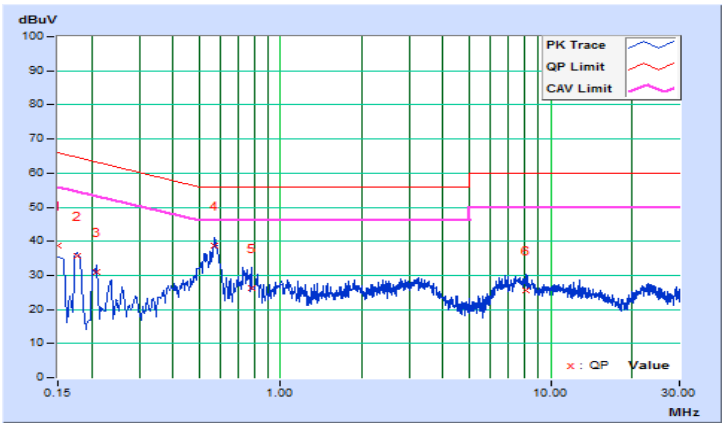
5.2.7 Test Results

Channel	TX Channel 0	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	28.60	18.48	38.69	28.57	66.00	56.00	-27.31	-27.43
2	0.17651	10.10	25.49	12.48	35.59	22.58	64.65	54.65	-29.06	-32.07
3	0.20865	10.10	20.75	8.33	30.85	18.43	63.26	53.26	-32.41	-34.83
4	**0.57228**	**10.11**	**28.68**	**20.46**	**38.79**	**30.57**	**56.00**	**46.00**	**-17.21**	**-15.43**
5	0.78342	10.12	16.09	8.71	26.21	18.83	56.00	46.00	-29.79	-27.17
6	8.06384	10.52	15.02	9.76	25.54	20.28	60.00	50.00	-34.46	-29.72

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.

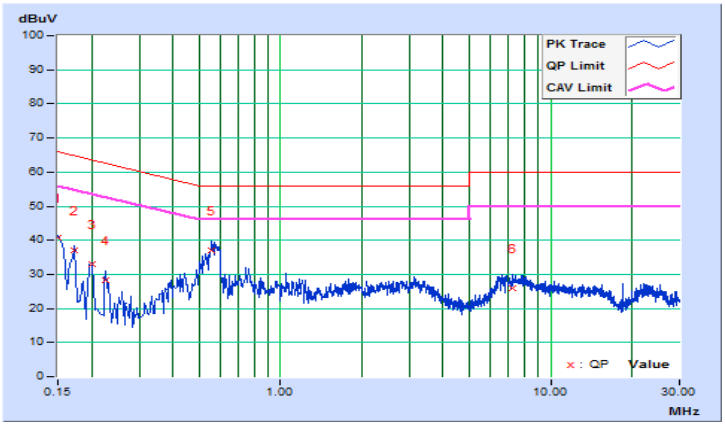


Channel	TX Channel 0	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	30.65	21.01	40.74	31.10	66.00	56.00	-25.26	-24.90
2	0.17346	10.09	26.90	12.90	36.99	22.99	64.79	54.79	-27.80	-31.80
3	0.19978	10.09	22.96	5.78	33.05	15.87	63.62	53.62	-30.57	-37.75
4	0.22429	10.10	18.04	0.51	28.14	10.61	62.66	52.66	-34.52	-42.05
5	0.55679	10.11	26.77	18.42	36.88	28.53	56.00	46.00	-19.12	-17.47
6	7.27402	10.42	15.44	10.49	25.86	20.91	60.00	50.00	-34.14	-29.09

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.

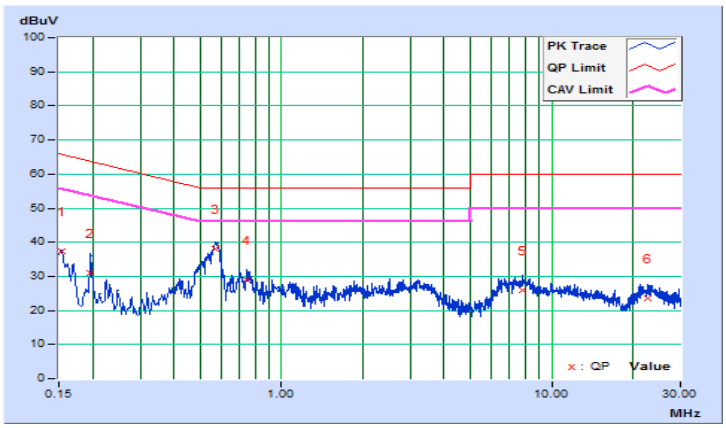


Channel	TX Channel 7	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.09	27.39	14.43	37.48	24.52	65.79	55.79	-28.31	-31.27
2	0.19692	10.10	20.82	1.49	30.92	11.59	63.74	53.74	-32.82	-42.15
3	0.56866	10.11	28.06	19.36	38.17	29.47	56.00	46.00	-17.83	-16.53
4	0.74399	10.12	18.76	10.59	28.88	20.71	56.00	46.00	-27.12	-25.29
5	7.80187	10.50	15.51	9.99	26.01	20.49	60.00	50.00	-33.99	-29.51
6	22.80454	11.35	12.19	7.07	23.54	18.42	60.00	50.00	-36.46	-31.58

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.

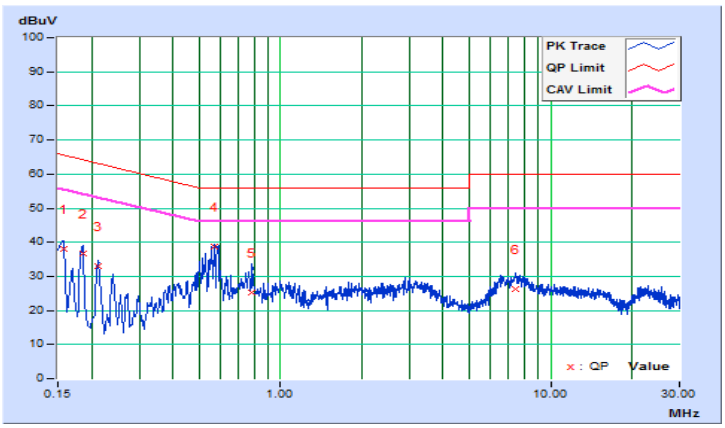


Channel	TX Channel 7	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15719	10.09	27.85	11.22	37.94	21.31	65.61	55.61	-27.67	-34.30
2	0.18508	10.09	26.64	9.92	36.73	20.01	64.25	54.25	-27.52	-34.24
3	0.21256	10.09	23.02	9.19	33.11	19.28	63.10	53.10	-29.99	-33.82
4	0.56866	10.11	28.47	19.96	38.58	30.07	56.00	46.00	-17.42	-15.93
5	0.78733	10.12	15.05	8.29	25.17	18.41	56.00	46.00	-30.83	-27.59
6	7.38741	10.43	15.72	10.59	26.15	21.02	60.00	50.00	-33.85	-28.98

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.

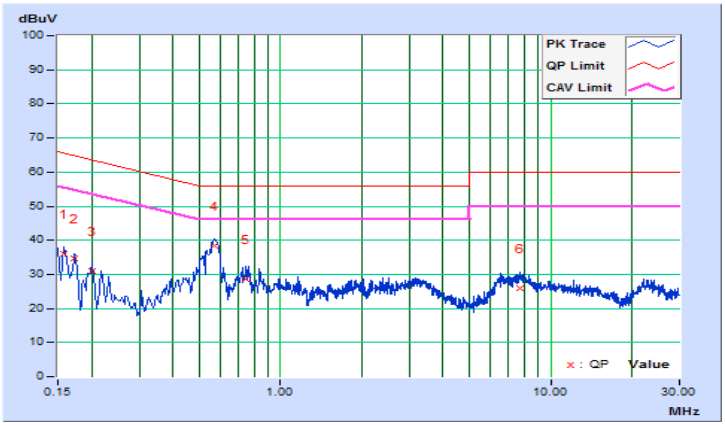


Channel	TX Channel 24	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15782	10.10	25.87	8.75	35.97	18.85	65.58	55.58	-29.61	-36.73
2	0.17346	10.10	24.49	10.59	34.59	20.69	64.79	54.79	-30.20	-34.10
3	0.20084	10.10	20.99	6.27	31.09	16.37	63.58	53.58	-32.49	-37.21
4	0.56866	10.11	28.34	19.66	38.45	29.77	56.00	46.00	-17.55	-16.23
5	0.74823	10.12	18.43	10.81	28.55	20.93	56.00	46.00	-27.45	-25.07
6	7.73931	10.50	15.54	10.14	26.04	20.64	60.00	50.00	-33.96	-29.36

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.

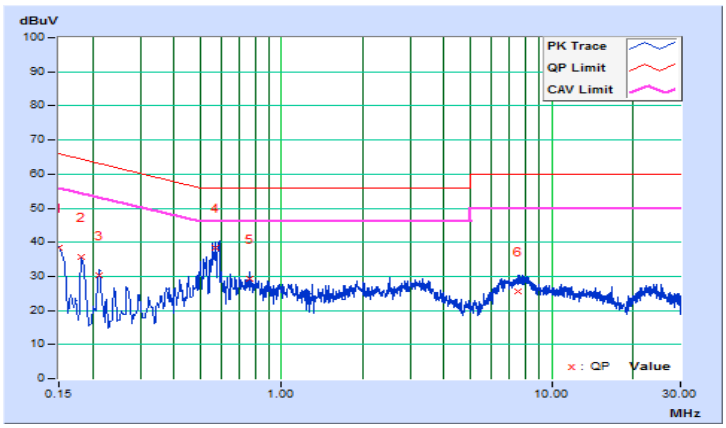


Channel	TX Channel 24	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	28.20	18.28	38.29	28.37	66.00	56.00	-27.71	-27.63
2	0.18128	10.09	25.58	11.56	35.67	21.65	64.43	54.43	-28.76	-32.78
3	0.21256	10.09	20.13	6.71	30.22	16.80	63.10	53.10	-32.88	-36.30
4	0.56866	10.11	28.37	19.55	38.48	29.66	56.00	46.00	-17.52	-16.34
5	0.75996	10.12	19.18	10.34	29.30	20.46	56.00	46.00	-26.70	-25.54
6	7.54381	10.44	15.14	9.88	25.58	20.32	60.00	50.00	-34.42	-29.68

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.



5.3 Number of Hopping Frequency Used

5.3.1 Limits of Hopping Frequency Used Measurement

Same as 4.3.1.

5.3.2 Test Setup

Same as 4.3.2.

5.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

5.3.4 Test Procedure

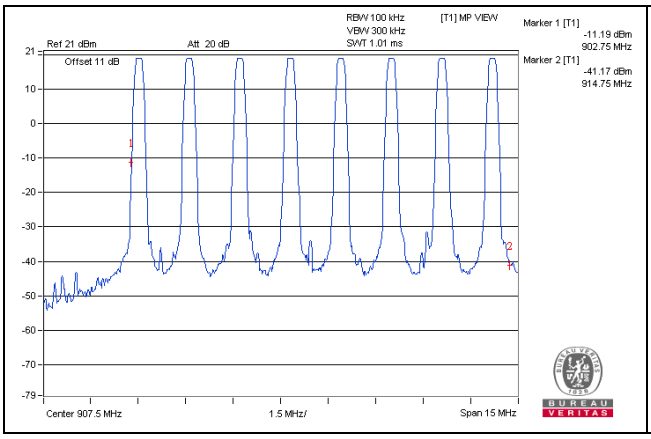
Same as 4.3.4.

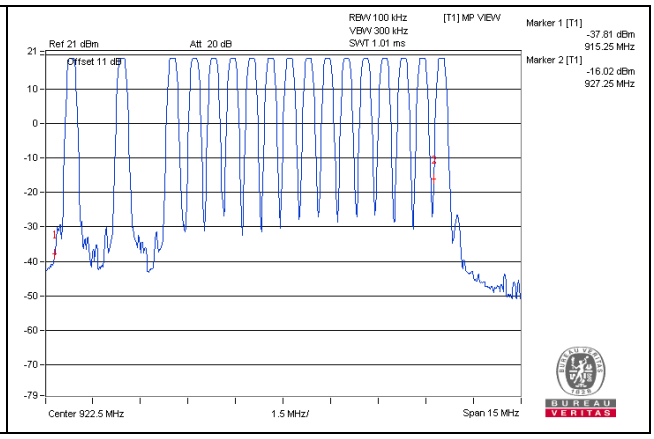
5.3.5 Deviation fromTest Standard

No deviation.

5.3.6 Test Results

There are 25 hopping frequencies in the hybrid mode.





5.4 Dwell Time on Each Channel

5.4.1 Limits of Dwell Time on Each Channel Measurement

Same as 4.4.1.

5.4.2 Test Setup

Same as 4.4.2.

5.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

5.4.4 Test Procedures

Same as 4.4.4.

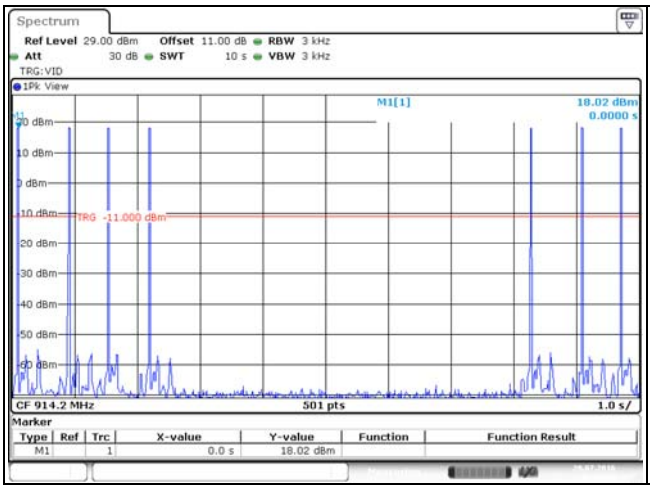
5.4.5 Deviation from Test Standard

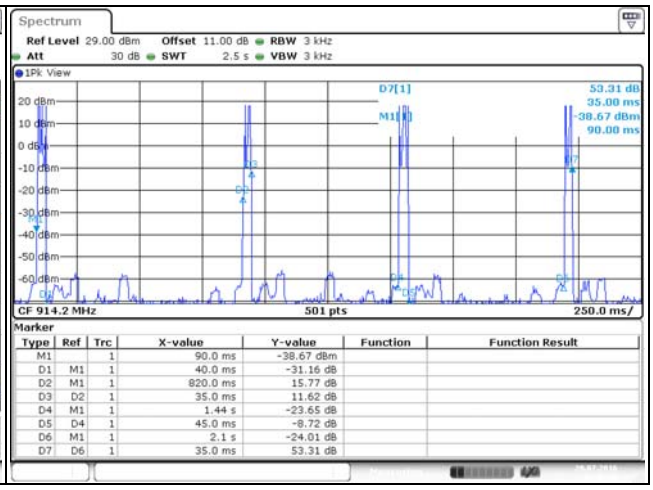
No deviation.

5.4.6 Test Results

Number of transmission in a time period	Length of transmission time (msec)	Result (msec)	Limit (msec)
4 times	40+35+45+35	155	400

Note: Test plots of the transmitting time slot are shown on following.





5.5 Conducted Output Power Measurement

5.5.1 Limits of Conducted Output Power Measurement

Same as 4.5.1.

5.5.2 Test Setup

Same as 4.5.2.

5.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

5.5.4 Test Procedure

Same as 4.5.4.

5.5.5 Deviation from Test Standard

No deviation.

5.5.6 EUT Operating Condition

Same as 4.5.6.

5.5.7 Test Results

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Pass / Fail
0	903.0	**67.453**	18.29	30	Pass
7	914.2	**67.453**	18.29	30	Pass
24	927.5	67.143	18.27	30	Pass

5.6 Power Spectral Density Measurement

5.6.1 Limits of Power Spectral Density Measurement

Same as 4.6.1.

5.6.2 Test Setup

Same as 4.6.2.

5.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

5.6.4 Test Procedure

Same as 4.6.4.

5.6.5 Deviation from Test Standard

No deviation.

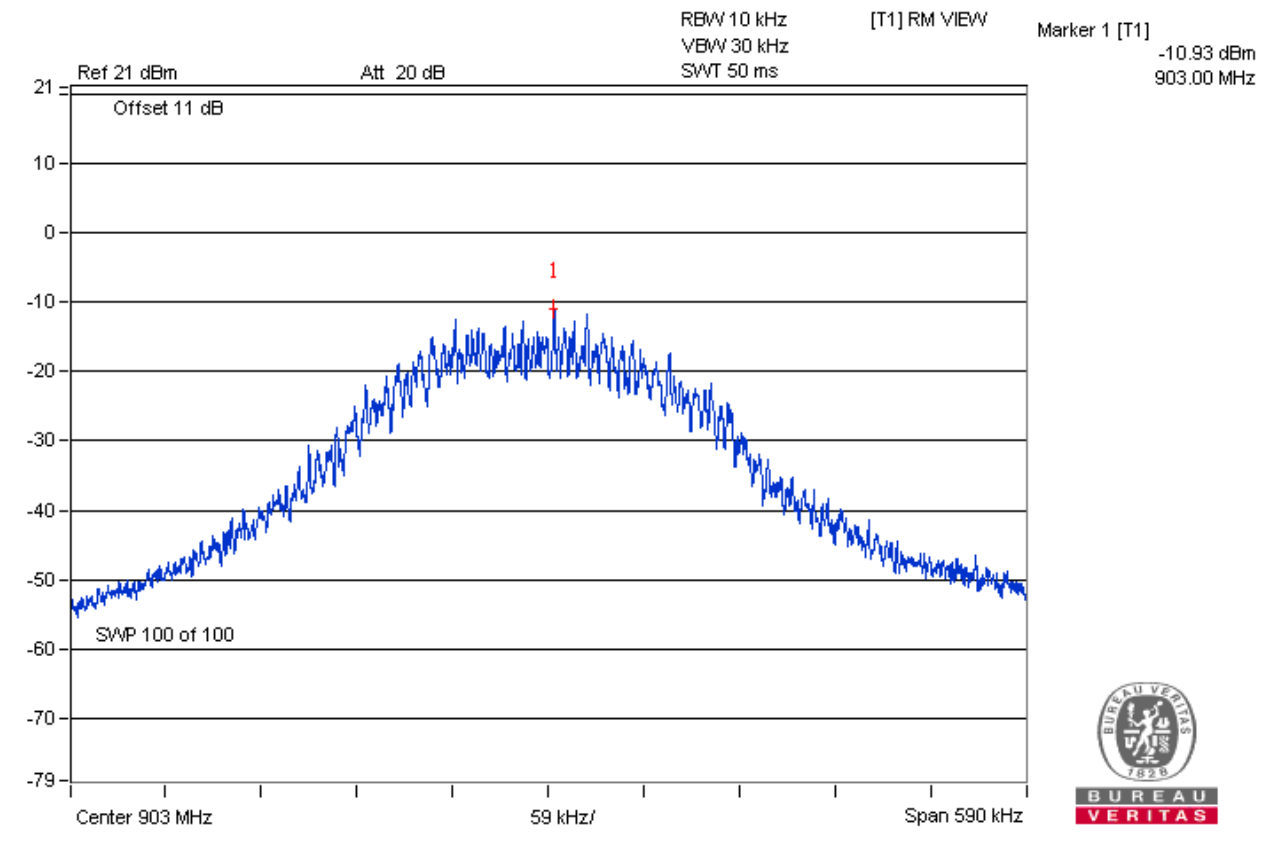
5.6.6 EUT Operating Condition

Same as 4.6.6.

5.6.7 Test Results

Channel	Freq. (MHz)	PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	903.0	-10.93	8	Pass
7	914.2	-11.73	8	Pass
24	927.5	-12.09	8	Pass

Spectrum Plot of Worst Value



5.7 Conducted Out of Band Emission Measurement

5.7.1 Limits of Conducted Out Of Band Emission Measurement

Same as 4.7.1.

5.7.2 Test Setup

Same as 4.7.2.

5.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

5.7.4 Test Procedure

Same as 4.7.4.

5.7.5 Deviation from Test Standard

No deviation.

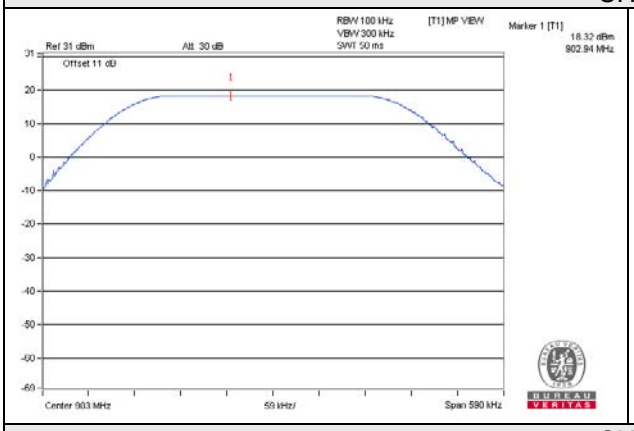
5.7.6 EUT Operating Condition

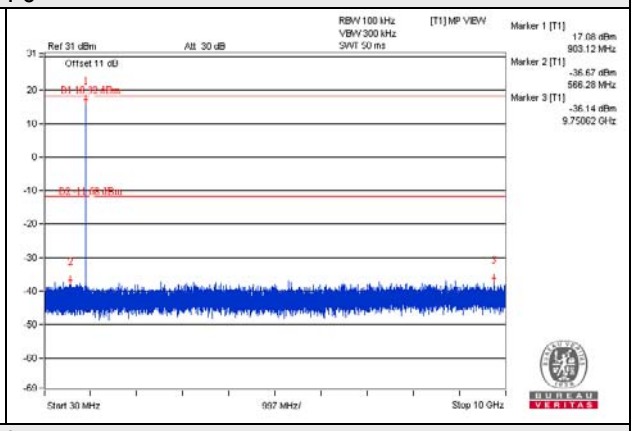
Same as 4.7.6.

5.7.7 Test Results

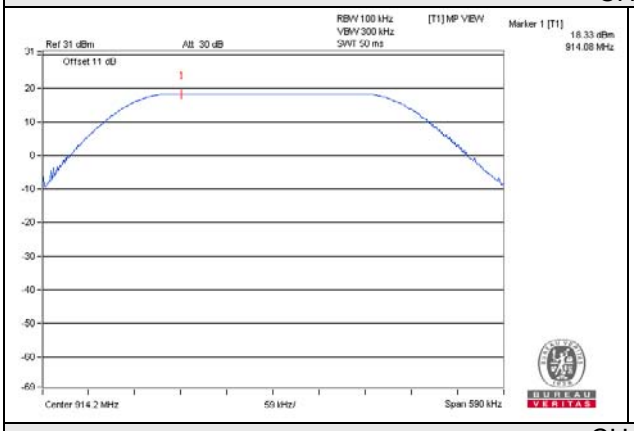
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

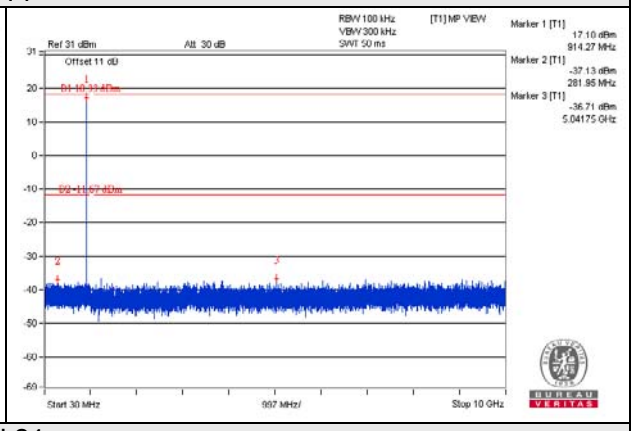
CH 0



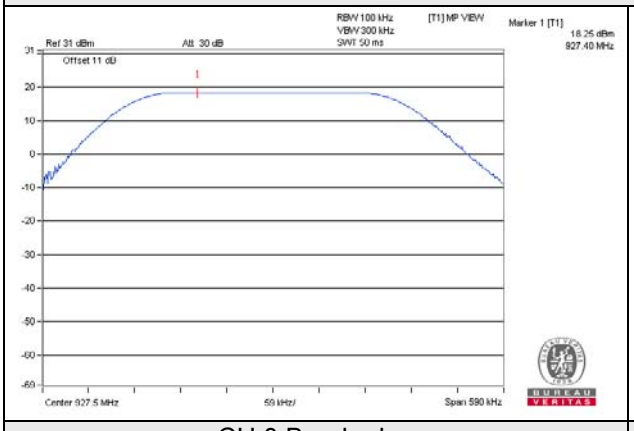


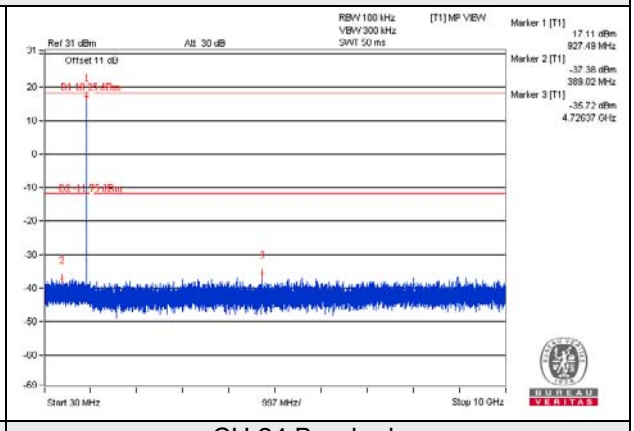
CH 7



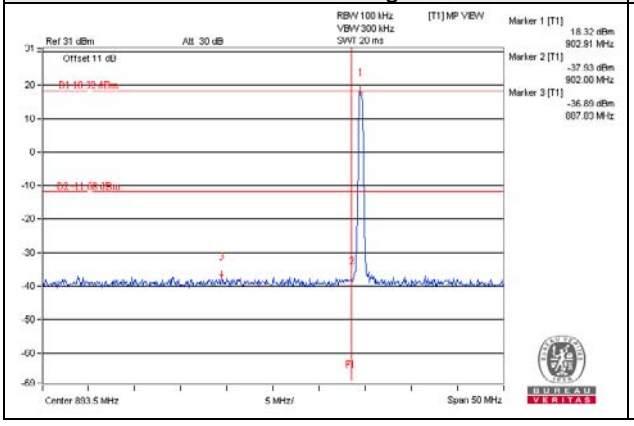


CH 24

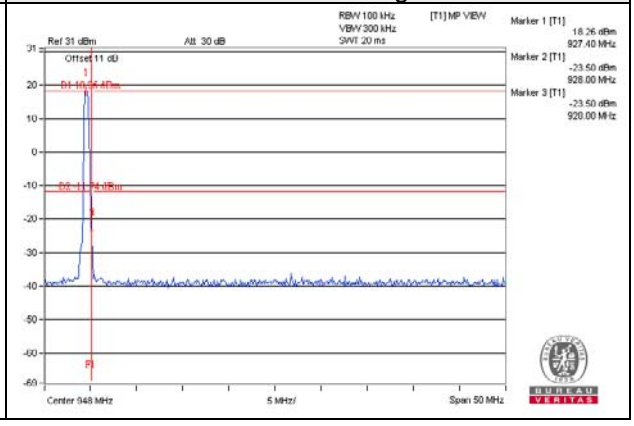




CH 0 Band edge



CH 24 Band edge



6 Test Types and Results (Hybrid Mode (500kHz Bandwidth, 25 channels))

6.1 Radiated Emission and Bandedge Measurement

6.1.1 Limits of Radiated Emission and Bandedge Measurement

Same as 4.1.1.

6.1.2 Test Instruments

Same as 4.1.2.

6.1.3 Test Procedures

Same as 4.1.3.

6.1.4 Deviation from Test Standard

No deviation.

6.1.5 Test Setup

Same as 4.1.5.

6.1.6 EUT Operating Conditions

Same as 4.1.6.

6.1.7 Test Results

Above 1GHz Data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	902.00	58.9 PK	84.1	-25.2	1.66 H	321	30.4	28.5
2	902.00	53.7 AV	83.8	-30.1	1.66 H	321	25.2	28.5
3	*903.00	114.1 PK			1.66 H	321	85.5	28.6
4	*903.00	113.8 AV			1.66 H	321	85.2	28.6
5	1806.00	48.8 PK	74.0	-25.2	1.41 H	226	53.7	-4.9
6	1806.00	47.0 AV	54.0	-7.0	1.41 H	226	51.9	-4.9
7	2709.00	42.6 PK	74.0	-31.4	1.35 H	25	44.9	-2.3
8	2709.00	38.4 AV	54.0	-15.6	1.35 H	25	40.7	-2.3
9	3612.00	44.0 PK	74.0	-30.0	1.72 H	202	44.5	-0.5
10	3612.00	36.9 AV	54.0	-17.1	1.72 H	202	37.4	-0.5
11	4515.00	45.3 PK	74.0	-28.7	1.69 H	229	42.3	3.0
12	4515.00	35.6 AV	54.0	-18.4	1.69 H	229	32.6	3.0
13	5418.00	50.0 PK	74.0	-24.0	2.54 H	301	44.3	5.7
14	5418.00	43.2 AV	54.0	-10.8	2.54 H	301	37.5	5.7
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	902.00	60.3 PK	88.0	-27.7	1.15 V	315	31.8	28.5
2	902.00	54.8 AV	87.5	-32.7	1.15 V	315	26.3	28.5
3	*903.00	118.0 PK			1.15 V	315	89.4	28.6
4	*903.00	117.5 AV			1.15 V	315	88.9	28.6
5	1806.00	49.5 PK	74.0	-24.5	1.52 V	319	54.4	-4.9
6	1806.00	48.5 AV	54.0	-5.5	1.52 V	319	53.4	-4.9
7	2709.00	42.2 PK	74.0	-31.8	1.65 V	291	44.5	-2.3
8	2709.00	37.9 AV	54.0	-16.1	1.65 V	291	40.2	-2.3
9	3612.00	43.3 PK	74.0	-30.7	1.64 V	122	43.8	-0.5
10	3612.00	37.5 AV	54.0	-16.5	1.64 V	122	38.0	-0.5
11	4515.00	45.6 PK	74.0	-28.4	1.63 V	219	42.6	3.0
12	4515.00	36.8 AV	54.0	-17.2	1.63 V	219	33.8	3.0
13	5418.00	48.7 PK	74.0	-25.3	1.47 V	225	43.0	5.7
14	5418.00	41.1 AV	54.0	-12.9	1.47 V	225	35.4	5.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 7	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*914.20	115.0 PK			1.63 H	148	86.0	29.0
2	*914.20	114.6 AV			1.63 H	148	85.6	29.0
3	928.00	57.8 PK	85.0	-27.2	1.63 H	148	28.6	29.2
4	928.00	54.2 AV	84.6	-30.4	1.63 H	148	25.0	29.2
5	1828.40	50.2 PK	74.0	-23.8	1.50 H	159	55.1	-4.9
6	1828.40	48.7 AV	54.0	-5.3	1.50 H	159	53.6	-4.9
7	2742.60	41.7 PK	74.0	-32.3	1.76 H	34	43.9	-2.2
8	2742.60	37.1 AV	54.0	-16.9	1.76 H	34	39.3	-2.2
9	3656.80	45.4 PK	74.0	-28.6	1.29 H	31	45.6	-0.2
10	3656.80	38.4 AV	54.0	-15.6	1.29 H	31	38.6	-0.2
11	4571.00	44.6 PK	74.0	-29.4	1.21 H	43	41.5	3.1
12	4571.00	35.6 AV	54.0	-18.4	1.21 H	43	32.5	3.1
13	5485.20	49.3 PK	74.0	-24.7	1.46 H	199	43.4	5.9
14	5485.20	42.3 AV	54.0	-11.7	1.46 H	199	36.4	5.9
15	7313.60	54.4 PK	74.0	-19.6	1.84 H	239	42.8	11.6
16	7313.60	46.0 AV	54.0	-8.0	1.84 H	239	34.4	11.6
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	*914.20	116.7 PK			1.68 V	310	87.7	29.0
2	*914.20	115.4 AV			1.68 V	310	86.4	29.0
3	928.00	57.9 PK	86.7	-28.8	1.68 V	310	28.7	29.2
4	928.00	53.6 AV	85.4	-31.8	1.68 V	310	24.4	29.2
5	1828.40	50.0 PK	74.0	-24.0	1.39 V	253	54.9	-4.9
6	1828.40	46.9 AV	54.0	-7.1	1.39 V	253	51.8	-4.9
7	2742.60	39.9 PK	74.0	-34.1	1.15 V	167	42.1	-2.2
8	2742.60	33.9 AV	54.0	-20.1	1.15 V	167	36.1	-2.2
9	3656.80	44.7 PK	74.0	-29.3	1.44 V	314	44.9	-0.2
10	3656.80	37.6 AV	54.0	-16.4	1.44 V	314	37.8	-0.2
11	4571.00	45.2 PK	74.0	-28.8	1.60 V	220	42.1	3.1
12	4571.00	37.8 AV	54.0	-16.2	1.60 V	220	34.7	3.1
13	5485.20	49.5 PK	74.0	-24.5	1.51 V	227	43.6	5.9
14	5485.20	41.4 AV	54.0	-12.6	1.51 V	227	35.5	5.9
15	7313.60	55.3 PK	74.0	-18.7	3.05 V	138	43.7	11.6
16	7313.60	49.0 AV	54.0	-5.0	3.05 V	138	37.4	11.6

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 24	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*927.50	113.1 PK			1.59 H	39	84.5	28.6
2	*927.50	111.1 AV			1.59 H	39	82.5	28.6
3	**928.00**	**81.7 PK**	**83.1**	**-1.4**	**1.58 H**	**45**	**53.0**	**28.7**
4	928.00	71.3 AV	78.1	-6.8	1.58 H	45	42.6	28.7
5	1855.00	49.4 PK	74.0	-24.6	1.48 H	229	54.3	-4.9
6	1855.00	48.9 AV	54.0	-5.1	1.48 H	229	53.8	-4.9
7	2782.50	41.0 PK	74.0	-33.0	1.53 H	27	43.1	-2.1
8	2782.50	34.1 AV	54.0	-19.9	1.53 H	27	36.2	-2.1
9	3710.00	44.2 PK	74.0	-29.8	1.98 H	204	44.2	0.0
10	3710.00	38.0 AV	54.0	-16.0	1.98 H	204	38.0	0.0
11	4637.50	45.4 PK	74.0	-28.6	1.70 H	154	42.1	3.3
12	4637.50	37.2 AV	54.0	-16.8	1.70 H	154	33.9	3.3
13	5565.00	47.9 PK	74.0	-26.1	1.54 H	202	42.0	5.9
14	5565.00	39.0 AV	54.0	-15.0	1.54 H	202	33.1	5.9
15	7420.00	58.5 PK	74.0	-15.5	1.69 H	180	46.6	11.9
16	7420.00	48.5 AV	54.0	-5.5	1.69 H	180	36.6	11.9

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	*927.50	116.8 PK			1.09 V	289	88.2	28.6
2	*927.50	114.9 AV			1.09 V	289	86.3	28.6
3	928.00	84.0 PK	86.8	-2.8	1.07 V	288	55.3	28.7
4	928.00	75.3 AV	81.9	-6.6	1.07 V	288	46.6	28.7
5	1855.00	46.4 PK	74.0	-27.6	1.21 V	11	51.3	-4.9
6	1855.00	44.4 AV	54.0	-9.6	1.21 V	11	49.3	-4.9
7	2782.50	40.2 PK	74.0	-33.8	1.23 V	203	42.3	-2.1
8	2782.50	33.1 AV	54.0	-20.9	1.23 V	203	35.2	-2.1
9	3710.00	45.0 PK	74.0	-29.0	1.98 V	281	45.0	0.0
10	3710.00	39.1 AV	54.0	-14.9	1.98 V	281	39.1	0.0
11	4637.50	46.1 PK	74.0	-27.9	1.47 V	223	42.8	3.3
12	4637.50	39.0 AV	54.0	-15.0	1.47 V	223	35.7	3.3
13	5565.00	47.6 PK	74.0	-26.4	1.67 V	285	41.7	5.9
14	5565.00	38.6 AV	54.0	-15.4	1.67 V	285	32.7	5.9
15	7420.00	60.3 PK	74.0	-13.7	3.23 V	112	48.4	11.9
16	7420.00	51.6 AV	54.0	-2.4	3.23 V	112	39.7	11.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz worst-case data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	31.94	29.7 QP	40.0	-10.3	1.25 H	256	44.6	-14.9
2	101.78	13.7 QP	43.5	-29.8	2.00 H	4	31.3	-17.6
3	293.84	18.0 QP	46.0	-28.0	1.25 H	280	30.5	-12.5
4	460.68	19.7 QP	46.0	-26.3	1.00 H	348	29.3	-9.6
5	689.60	24.3 QP	46.0	-21.7	1.00 H	133	30.4	-6.1
6	978.66	28.0 QP	54.0	-26.0	1.50 H	71	29.2	-1.2
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	37.76	25.6 QP	40.0	-14.4	1.25 V	12	40.0	-14.4
2	151.25	19.5 QP	43.5	-24.0	1.00 V	67	32.6	-13.1
3	300.63	24.1 QP	46.0	-21.9	1.50 V	44	36.4	-12.3
4	596.48	22.8 QP	46.0	-23.2	2.00 V	5	30.2	-7.4
5	800.18	25.8 QP	46.0	-20.2	1.00 V	123	30.0	-4.2
6	986.42	27.8 QP	54.0	-26.2	1.25 V	335	29.0	-1.2

Remarks:

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

CHANNEL	TX Channel 7	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	42.61	15.2 QP	40.0	-24.8	1.00 H	41	28.9	-13.7
2	278.32	15.6 QP	46.0	-30.4	1.00 H	269	28.3	-12.7
3	431.58	18.7 QP	46.0	-27.3	1.00 H	85	28.8	-10.1
4	547.98	20.7 QP	46.0	-25.3	1.00 H	151	29.4	-8.7
5	615.88	22.5 QP	46.0	-23.5	1.00 H	167	29.4	-6.9
6	804.06	25.5 QP	46.0	-20.5	1.00 H	191	29.5	-4.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.85	29.4 QP	40.0	-10.6	1.67 V	12	44.1	-14.7
2	67.83	14.2 QP	40.0	-25.8	1.27 V	320	28.7	-14.5
3	129.91	13.4 QP	43.5	-30.1	1.43 V	109	28.2	-14.8
4	287.05	21.1 QP	46.0	-24.9	1.08 V	140	33.6	-12.5
5	414.12	20.9 QP	46.0	-25.1	1.29 V	199	31.6	-10.7
6	682.81	22.6 QP	46.0	-23.4	2.17 V	169	28.7	-6.1

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

CHANNEL	TX Channel 24	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	32.91	26.3 QP	40.0	-13.7	1.50 H	6	41.1	-14.8
2	60.07	14.6 QP	40.0	-25.4	1.00 H	11	28.3	-13.7
3	177.44	14.2 QP	43.5	-29.3	2.00 H	191	28.5	-14.3
4	365.62	18.1 QP	46.0	-27.9	1.50 H	196	29.5	-11.4
5	492.69	19.5 QP	46.0	-26.5	1.00 H	263	28.9	-9.4
6	597.45	22.4 QP	46.0	-23.6	1.50 H	313	29.8	-7.4
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	59.10	14.5 QP	40.0	-25.5	1.28 V	96	28.1	-13.6
2	120.21	12.4 QP	43.5	-31.1	1.50 V	351	28.0	-15.6
3	150.28	22.2 QP	43.5	-21.3	1.50 V	62	35.3	-13.1
4	290.93	23.8 QP	46.0	-22.2	1.38 V	122	36.2	-12.4
5	411.21	21.6 QP	46.0	-24.4	2.03 V	182	32.4	-10.8
6	678.93	25.2 QP	46.0	-20.8	2.19 V	140	31.4	-6.2

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

6.2 Conducted Emission Measurement

6.2.1 Limits of Conducted Emission Measurement

Same as 4.2.1.

6.2.2 Test Instruments

Same as 4.2.2.

6.2.3 Test Procedures

Same as 4.2.3.

6.2.4 Deviation from Test Standard

No deviation.

6.2.5 Test Setup

Same as 4.2.5.

6.2.6 EUT Operating Condition

Same as 4.1.6.

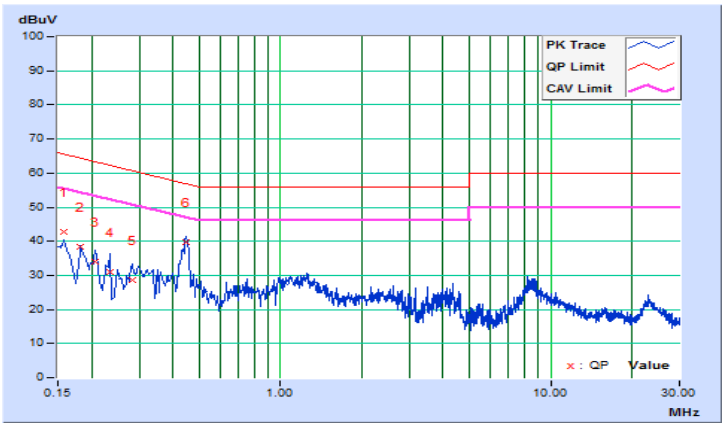
6.2.7 Test Results

Channel	TX Channel 0	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15687	10.10	32.63	19.34	42.73	29.44	65.63	55.63	-22.90	-26.19
2	0.18037	10.10	28.36	16.90	38.46	27.00	64.47	54.47	-26.01	-27.47
3	0.20523	10.10	23.98	13.03	34.08	23.13	63.40	53.40	-29.32	-30.27
4	0.23289	10.11	20.78	10.06	30.89	20.17	62.35	52.35	-31.46	-32.18
5	0.28154	10.11	18.53	10.71	28.64	20.82	60.77	50.77	-32.13	-29.95
6	0.44527	10.12	29.56	23.18	39.68	33.30	56.96	46.96	-17.28	-13.66

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.

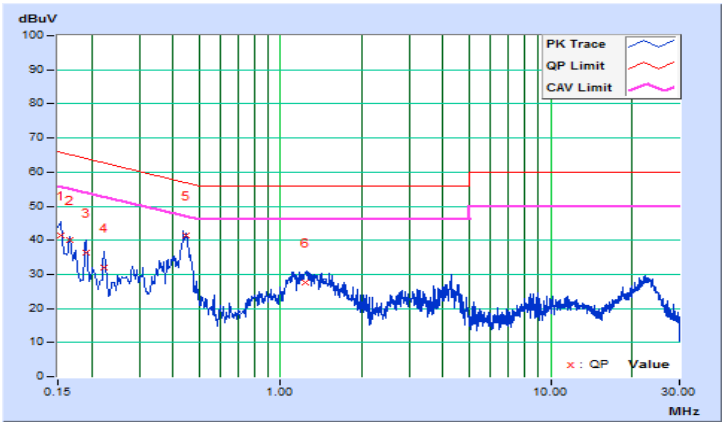


Channel	TX Channel 0	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.10	31.31	17.10	41.41	27.20	65.78	55.78	-24.37	-28.58
2	0.16535	10.10	29.90	16.46	40.00	26.56	65.19	55.19	-25.19	-28.63
3	0.19013	10.10	26.22	14.07	36.32	24.17	64.03	54.03	-27.71	-29.86
4	0.22152	10.11	21.87	8.88	31.98	18.99	62.76	52.76	-30.78	-33.77
5	**0.44527**	**10.12**	**31.37**	**24.89**	**41.49**	**35.01**	**56.96**	**46.96**	**-15.47**	**-11.95**
6	1.23107	10.14	17.48	12.04	27.62	22.18	56.00	46.00	-28.38	-23.82

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.

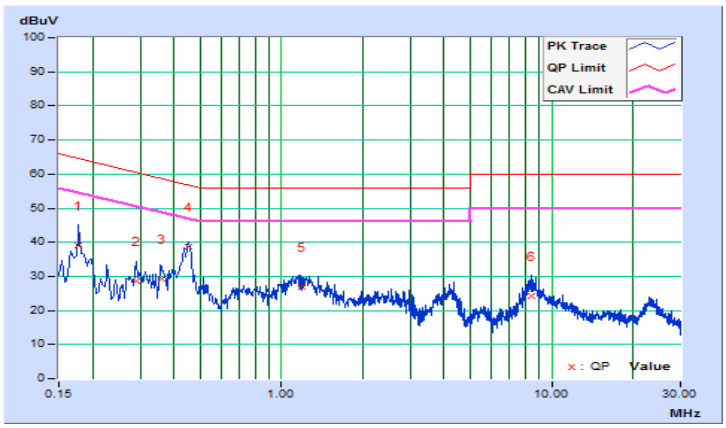


Channel	TX Channel 7	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17615	10.10	29.04	17.22	39.14	27.32	64.67	54.67	-25.53	-27.35
2	0.28906	10.11	18.63	10.54	28.74	20.65	60.55	50.55	-31.81	-29.90
3	0.35876	10.11	19.19	11.87	29.30	21.98	58.76	48.76	-29.46	-26.78
4	0.45237	10.12	28.71	21.84	38.83	31.96	56.83	46.83	-18.00	-14.87
5	1.18649	10.15	16.72	10.16	26.87	20.31	56.00	46.00	-29.13	-25.69
6	8.37000	10.53	13.66	6.79	24.19	17.32	60.00	50.00	-35.81	-32.68

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.

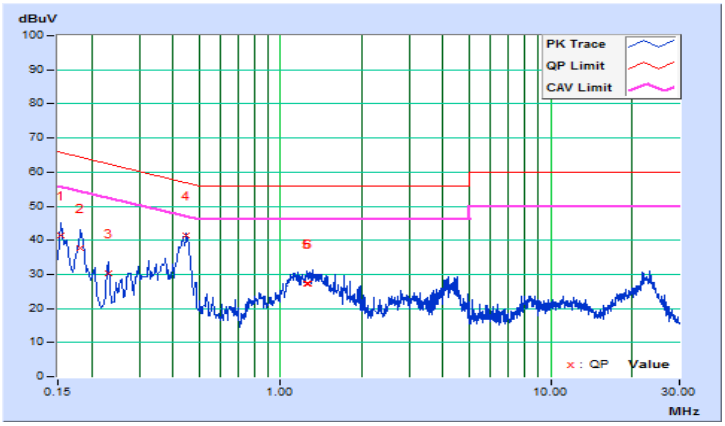


Channel	TX Channel 7	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.10	31.45	17.27	41.55	27.37	65.78	55.78	-24.23	-28.41
2	0.18037	10.10	27.68	14.83	37.78	24.93	64.47	54.47	-26.69	-29.54
3	0.22985	10.11	20.06	7.72	30.17	17.83	62.46	52.46	-32.29	-34.63
4	**0.44527**	**10.12**	**31.33**	**24.89**	**41.45**	**35.01**	**56.96**	**46.96**	**-15.51**	**-11.95**
5	1.24411	10.14	16.97	11.48	27.11	21.62	56.00	46.00	-28.89	-24.38
6	1.26061	10.14	17.09	11.00	27.23	21.14	56.00	46.00	-28.77	-24.86

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.

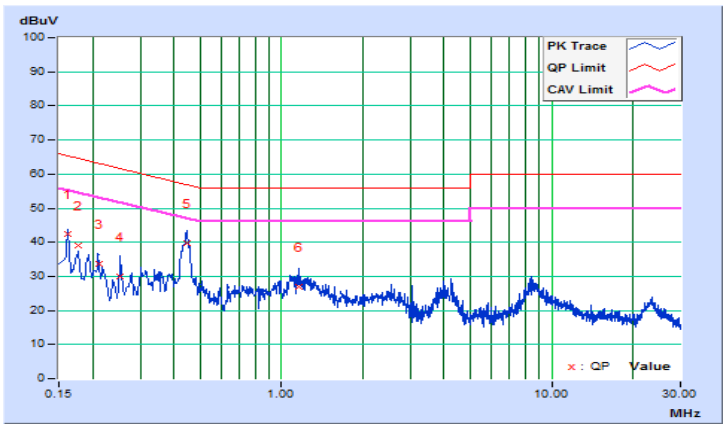


Channel	TX Channel 24	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16105	10.10	32.26	19.18	42.36	29.28	65.41	55.41	-23.05	-26.13
2	0.17615	10.10	29.04	17.29	39.14	27.39	64.67	54.67	-25.53	-27.28
3	0.21015	10.10	23.69	12.86	33.79	22.96	63.20	53.20	-29.41	-30.24
4	0.25139	10.11	19.84	10.20	29.95	20.31	61.71	51.71	-31.76	-31.40
5	0.44527	10.12	29.47	23.14	39.59	33.26	56.96	46.96	-17.37	-13.70
6	1.15564	10.15	16.90	10.86	27.05	21.01	56.00	46.00	-28.95	-24.99

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.

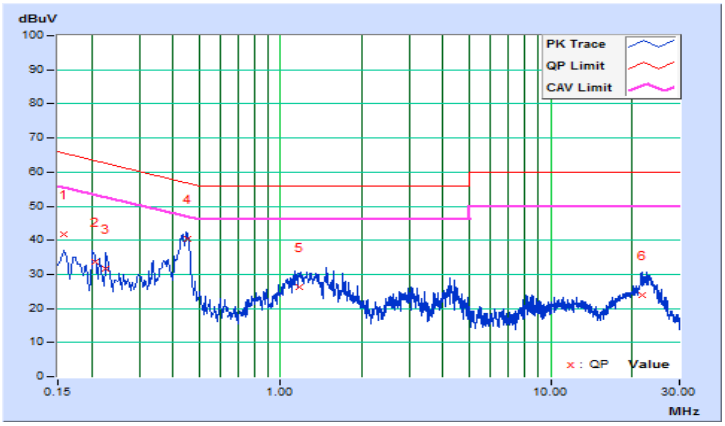


Channel	TX Channel 24	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15687	10.10	31.68	17.44	41.78	27.54	65.63	55.63	-23.85	-28.09
2	0.20600	10.10	23.73	10.77	33.83	20.87	63.37	53.37	-29.54	-32.50
3	0.22387	10.11	21.52	8.62	31.63	18.73	62.67	52.67	-31.04	-33.94
4	0.45237	10.12	30.26	23.49	40.38	33.61	56.83	46.83	-16.45	-13.22
5	1.16788	10.14	16.00	9.39	26.14	19.53	56.00	46.00	-29.86	-26.47
6	21.71400	10.96	12.92	6.27	23.88	17.23	60.00	50.00	-36.12	-32.77

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.



6.3 Number of Hopping Frequency Used

6.3.1 Limits of Hopping Frequency Used Measurement

Same as 4.3.1.

6.3.2 Test Setup

Same as 4.3.2.

6.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

6.3.4 Test Procedure

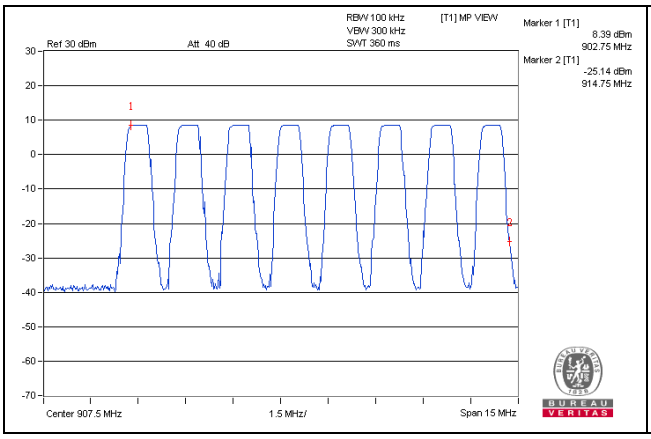
Same as 4.3.4.

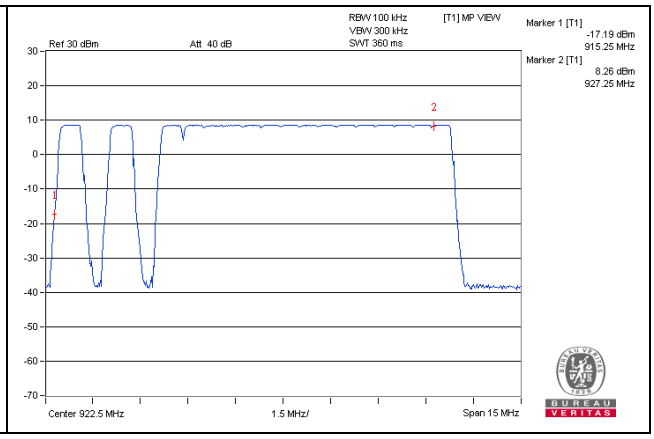
6.3.5 Deviation fromTest Standard

No deviation.

6.3.6 Test Results

There are 25 hopping frequencies in the hybrid mode.





6.4 Dwell Time on Each Channel

6.4.1 Limits of Dwell Time on Each Channel Measurement

Same as 4.4.1.

6.4.2 Test Setup

Same as 4.4.2.

6.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

6.4.4 Test Procedures

Same as 4.4.4.

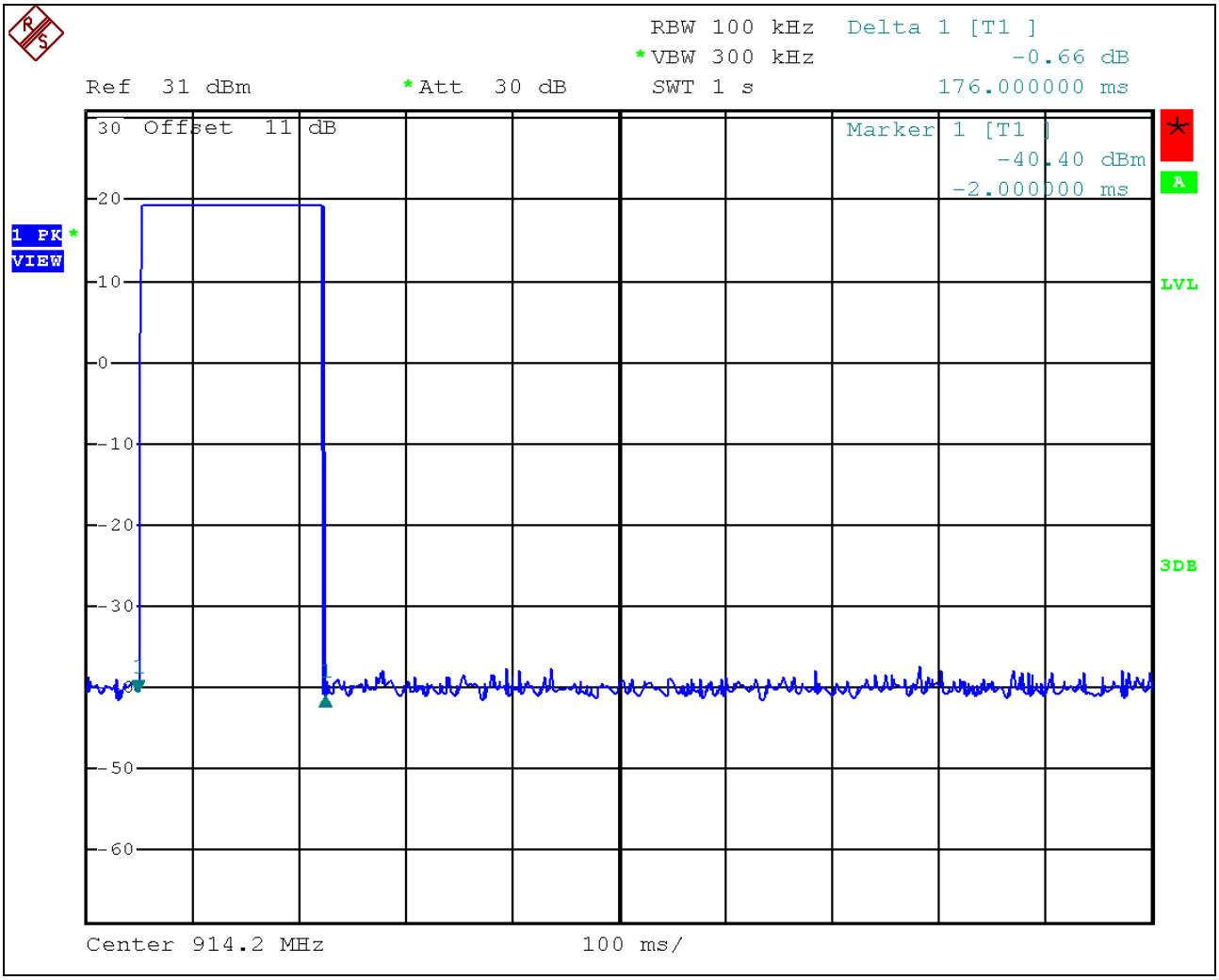
6.4.5 Deviation from Test Standard

No deviation.

6.4.6 Test Results

Number of transmission in a time period	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 time	176	176	400

Note: Test plots of the transmitting time slot are shown on following.



6.5 Conducted Output Power Measurement

6.5.1 Limits of Conducted Output Power Measurement

Same as 4.5.1.

6.5.2 Test Setup

Same as 4.5.2.

6.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

6.5.4 Test Procedure

Same as 4.5.4.

6.5.5 Deviation from Test Standard

No deviation.

6.5.6 EUT Operating Condition

Same as 4.5.6.

6.5.7 Test Results

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Pass / Fail
0	903.0	83.753	19.23	30	Pass
7	914.2	83.560	19.22	30	Pass
24	927.5	**83.946**	19.24	30	Pass

6.6 Power Spectral Density Measurement

6.6.1 Limits of Power Spectral Density Measurement

Same as 4.6.1.

6.6.2 Test Setup

Same as 4.6.2.

6.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

6.6.4 Test Procedure

Same as 4.6.4.

6.6.5 Deviation from Test Standard

No deviation.

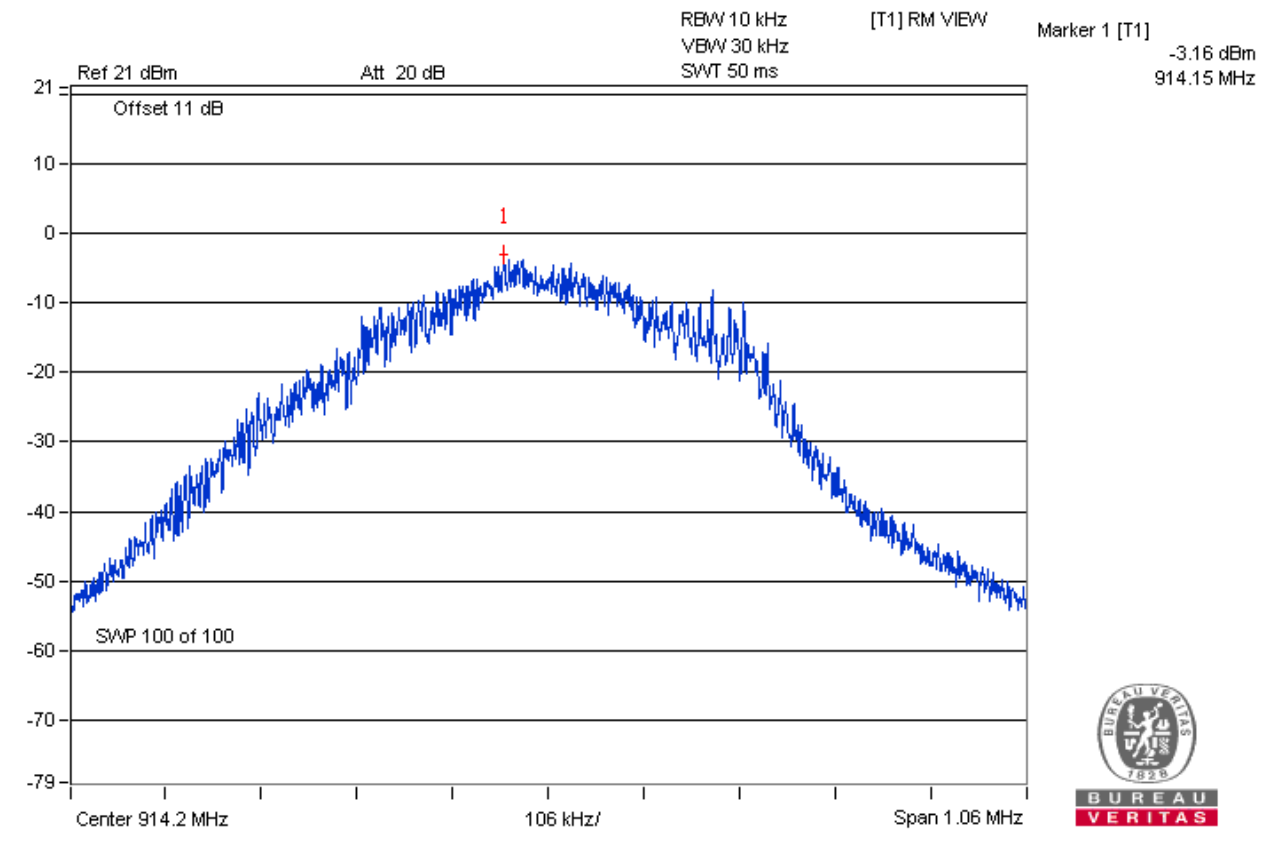
6.6.6 EUT Operating Condition

Same as 4.6.6.

6.6.7 Test Results

Channel	Freq. (MHz)	PSD (dBm)	Limit (dBm)	Pass / Fail
0	903.0	-4.38	8	Pass
7	914.2	-3.16	8	Pass
24	927.5	-4.47	8	Pass

Spectrum Plot of Worst Value



6.7 Conducted Out of Band Emission Measurement

6.7.1 Limits of Conducted Out Of Band Emission Measurement

Same as 4.7.1.

6.7.2 Test Setup

Same as 4.7.2.

6.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

6.7.4 Test Procedure

Same as 4.7.4.

6.7.5 Deviation from Test Standard

No deviation.

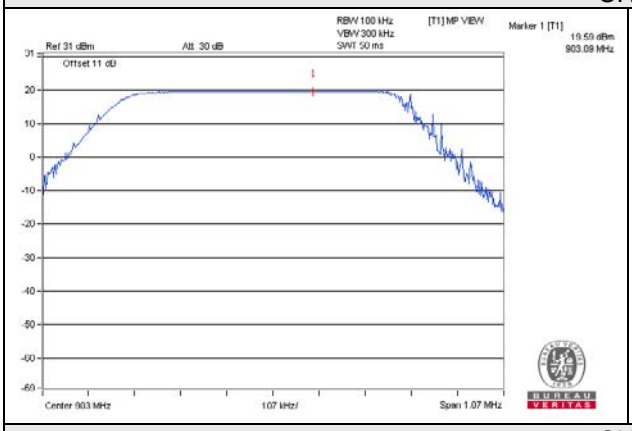
6.7.6 EUT Operating Condition

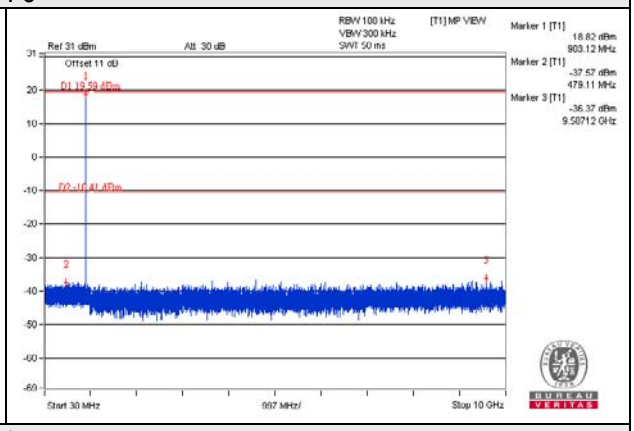
Same as 4.7.6.

6.7.7 Test Results

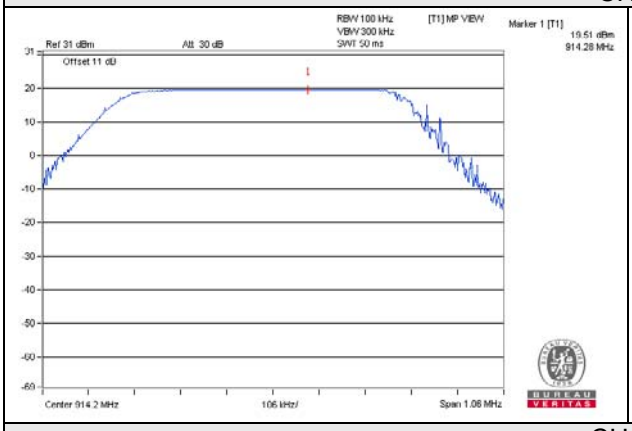
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

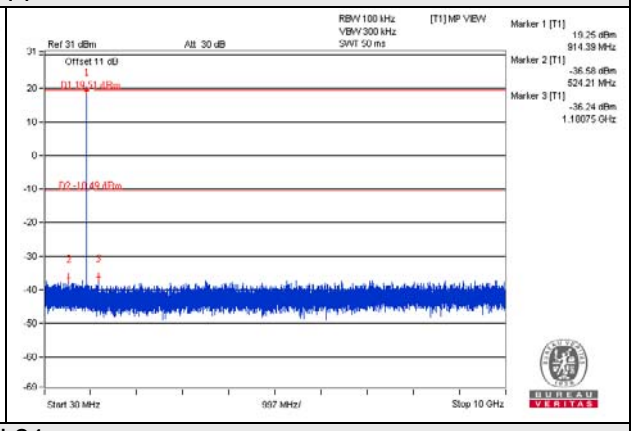
CH 0



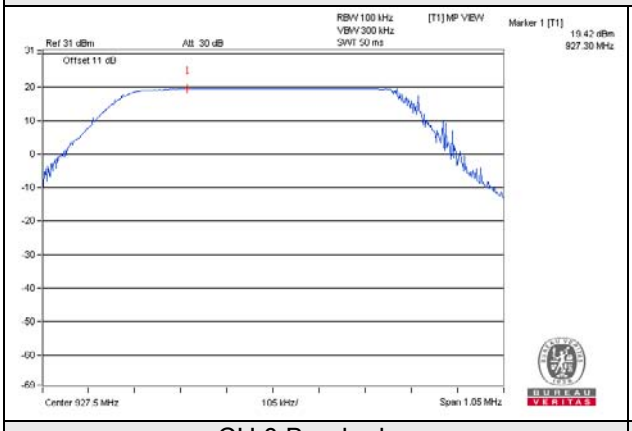


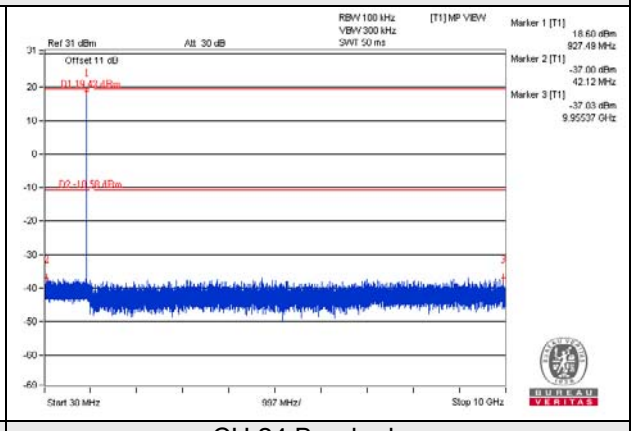
CH 7



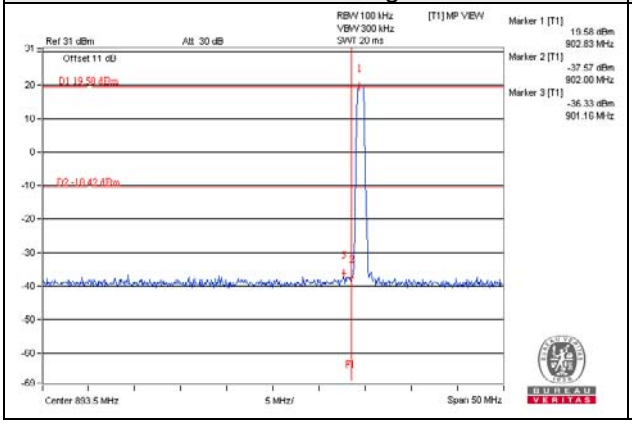


CH 24

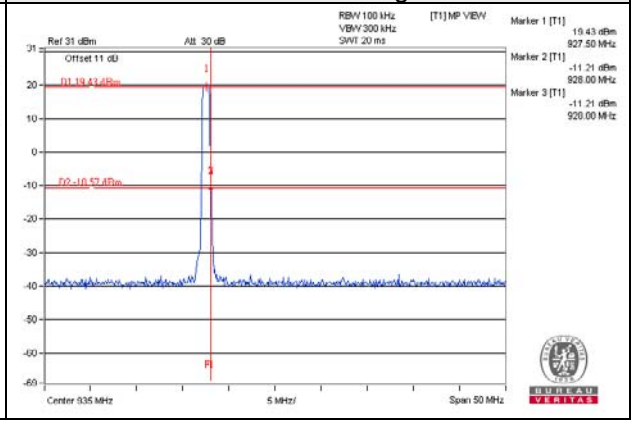




CH 0 Band edge



CH 24 Band edge



7 Test Types and Results (Hybrid Mode (500kHz Bandwidth, 8 channels))

7.1 Radiated Emission and Bandedge Measurement

7.1.1 Limits of Radiated Emission and Bandedge Measurement

Same as 4.1.1.

7.1.2 Test Instruments

Same as 4.1.2.

7.1.3 Test Procedures

Same as 4.1.3.

7.1.4 Deviation from Test Standard

No deviation.

7.1.5 Test Setup

Same as 4.1.5.

7.1.6 EUT Operating Conditions

Same as 4.1.6.

7.1.7 Test Results

Above 1GHz Data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	902.00	58.9 PK	84.1	-25.2	1.66 H	321	30.4	28.5
2	902.00	53.7 AV	83.8	-30.1	1.66 H	321	25.2	28.5
3	*903.00	114.1 PK			1.66 H	321	85.5	28.6
4	*903.00	113.8 AV			1.66 H	321	85.2	28.6
5	1806.00	48.8 PK	74.0	-25.2	1.41 H	226	53.7	-4.9
6	1806.00	47.0 AV	54.0	-7.0	1.41 H	226	51.9	-4.9
7	2709.00	42.6 PK	74.0	-31.4	1.35 H	25	44.9	-2.3
8	2709.00	38.4 AV	54.0	-15.6	1.35 H	25	40.7	-2.3
9	3612.00	44.0 PK	74.0	-30.0	1.72 H	202	44.5	-0.5
10	3612.00	36.9 AV	54.0	-17.1	1.72 H	202	37.4	-0.5
11	4515.00	45.3 PK	74.0	-28.7	1.69 H	229	42.3	3.0
12	4515.00	35.6 AV	54.0	-18.4	1.69 H	229	32.6	3.0
13	5418.00	50.0 PK	74.0	-24.0	2.54 H	301	44.3	5.7
14	5418.00	43.2 AV	54.0	-10.8	2.54 H	301	37.5	5.7
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	902.00	60.3 PK	88.0	-27.7	1.15 V	315	31.8	28.5
2	902.00	54.8 AV	87.5	-32.7	1.15 V	315	26.3	28.5
3	*903.00	118.0 PK			1.15 V	315	89.4	28.6
4	*903.00	117.5 AV			1.15 V	315	88.9	28.6
5	1806.00	49.5 PK	74.0	-24.5	1.52 V	319	54.4	-4.9
6	1806.00	48.5 AV	54.0	-5.5	1.52 V	319	53.4	-4.9
7	2709.00	42.2 PK	74.0	-31.8	1.65 V	291	44.5	-2.3
8	2709.00	37.9 AV	54.0	-16.1	1.65 V	291	40.2	-2.3
9	3612.00	43.3 PK	74.0	-30.7	1.64 V	122	43.8	-0.5
10	3612.00	37.5 AV	54.0	-16.5	1.64 V	122	38.0	-0.5
11	4515.00	45.6 PK	74.0	-28.4	1.63 V	219	42.6	3.0
12	4515.00	36.8 AV	54.0	-17.2	1.63 V	219	33.8	3.0
13	5418.00	48.7 PK	74.0	-25.3	1.47 V	225	43.0	5.7
14	5418.00	41.1 AV	54.0	-12.9	1.47 V	225	35.4	5.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*907.80	114.2 PK			1.62 H	323	85.3	28.9
2	*907.80	113.6 AV			1.62 H	323	84.7	28.9
3	1815.60	51.8 PK	74.0	-22.2	1.50 H	23	56.7	-4.9
4	**1815.60**	**50.8 AV**	**54.0**	**-3.2**	**1.50 H**	**23**	**55.7**	**-4.9**
5	2723.40	44.0 PK	74.0	-30.0	1.46 H	32	46.2	-2.2
6	2723.40	40.3 AV	54.0	-13.7	1.46 H	32	42.5	-2.2
7	3631.20	44.2 PK	74.0	-29.8	1.66 H	203	44.7	-0.5
8	3631.20	37.6 AV	54.0	-16.4	1.66 H	203	38.1	-0.5
9	4539.00	45.2 PK	74.0	-28.8	1.91 H	244	42.1	3.1
10	4539.00	35.8 AV	54.0	-18.2	1.91 H	244	32.7	3.1
11	5446.80	49.7 PK	74.0	-24.3	1.41 H	196	44.0	5.7
12	5446.80	42.9 AV	54.0	-11.1	1.41 H	196	37.2	5.7
13	7262.40	54.5 PK	74.0	-19.5	1.49 H	246	43.1	11.4
14	7262.40	48.3 AV	54.0	-5.7	1.49 H	246	36.9	11.4
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	*907.80	117.3 PK			1.77 V	312	88.4	28.9
2	*907.80	116.2 AV			1.77 V	312	87.3	28.9
3	1815.60	48.4 PK	74.0	-25.6	2.93 V	112	53.3	-4.9
4	1815.60	46.1 AV	54.0	-7.9	2.93 V	112	51.0	-4.9
5	2723.40	41.6 PK	74.0	-32.4	1.21 V	288	43.8	-2.2
6	2723.40	35.2 AV	54.0	-18.8	1.21 V	288	37.4	-2.2
7	3631.20	43.4 PK	74.0	-30.6	1.45 V	313	43.9	-0.5
8	3631.20	36.9 AV	54.0	-17.1	1.45 V	313	37.4	-0.5
9	4539.00	45.0 PK	74.0	-29.0	1.73 V	219	41.9	3.1
10	4539.00	36.5 AV	54.0	-17.5	1.73 V	219	33.4	3.1
11	5446.80	49.2 PK	74.0	-24.8	1.20 V	227	43.5	5.7
12	5446.80	41.5 AV	54.0	-12.5	1.20 V	227	35.8	5.7
13	7262.40	55.8 PK	74.0	-18.2	2.98 V	140	44.4	11.4
14	7262.40	49.9 AV	54.0	-4.1	2.98 V	140	38.5	11.4

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 7	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	30MHz ~ 10GHz		

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	*914.20	115.0 PK			1.63 H	148	86.0	29.0
2	*914.20	114.6 AV			1.63 H	148	85.6	29.0
3	928.00	57.8 PK	85.0	-27.2	1.63 H	148	28.6	29.2
4	928.00	54.2 AV	84.6	-30.4	1.63 H	148	25.0	29.2
5	1828.40	50.2 PK	74.0	-23.8	1.50 H	159	55.1	-4.9
6	1828.40	48.7 AV	54.0	-5.3	1.50 H	159	53.6	-4.9
7	2742.60	41.7 PK	74.0	-32.3	1.76 H	34	43.9	-2.2
8	2742.60	37.1 AV	54.0	-16.9	1.76 H	34	39.3	-2.2
9	3656.80	45.4 PK	74.0	-28.6	1.29 H	31	45.6	-0.2
10	3656.80	38.4 AV	54.0	-15.6	1.29 H	31	38.6	-0.2
11	4571.00	44.6 PK	74.0	-29.4	1.21 H	43	41.5	3.1
12	4571.00	35.6 AV	54.0	-18.4	1.21 H	43	32.5	3.1
13	5485.20	49.3 PK	74.0	-24.7	1.46 H	199	43.4	5.9
14	5485.20	42.3 AV	54.0	-11.7	1.46 H	199	36.4	5.9
15	7313.60	54.4 PK	74.0	-19.6	1.84 H	239	42.8	11.6
16	7313.60	46.0 AV	54.0	-8.0	1.84 H	239	34.4	11.6
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	*914.20	116.7 PK			1.68 V	310	87.7	29.0
2	*914.20	115.4 AV			1.68 V	310	86.4	29.0
3	928.00	57.9 PK	86.7	-28.8	1.68 V	310	28.7	29.2
4	928.00	53.6 AV	85.4	-31.8	1.68 V	310	24.4	29.2
5	1828.40	50.0 PK	74.0	-24.0	1.39 V	253	54.9	-4.9
6	1828.40	46.9 AV	54.0	-7.1	1.39 V	253	51.8	-4.9
7	2742.60	39.9 PK	74.0	-34.1	1.15 V	167	42.1	-2.2
8	2742.60	33.9 AV	54.0	-20.1	1.15 V	167	36.1	-2.2
9	3656.80	44.7 PK	74.0	-29.3	1.44 V	314	44.9	-0.2
10	3656.80	37.6 AV	54.0	-16.4	1.44 V	314	37.8	-0.2
11	4571.00	45.2 PK	74.0	-28.8	1.60 V	220	42.1	3.1
12	4571.00	37.8 AV	54.0	-16.2	1.60 V	220	34.7	3.1
13	5485.20	49.5 PK	74.0	-24.5	1.51 V	227	43.6	5.9
14	5485.20	41.4 AV	54.0	-12.6	1.51 V	227	35.5	5.9
15	7313.60	55.3 PK	74.0	-18.7	3.05 V	138	43.7	11.6
16	7313.60	49.0 AV	54.0	-5.0	3.05 V	138	37.4	11.6

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz worst-case data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	52.31	15.1 QP	40.0	-24.9	2.00 H	58	28.5	-13.4
2	144.46	17.5 QP	43.5	-26.0	1.50 H	202	31.2	-13.7
3	270.56	15.4 QP	46.0	-30.6	1.80 H	315	28.5	-13.1
4	405.39	17.8 QP	46.0	-28.2	2.63 H	19	28.6	-10.8
5	480.08	19.6 QP	46.0	-26.4	1.07 H	4	29.0	-9.4
6	650.80	22.7 QP	46.0	-23.3	2.00 H	1	29.2	-6.5
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	31.94	35.0 QP	40.0	-5.0	1.63 V	2	49.9	-14.9
2	144.46	24.0 QP	43.5	-19.5	2.19 V	74	37.7	-13.7
3	290.93	23.8 QP	46.0	-22.2	1.58 V	122	36.2	-12.4
4	394.72	19.0 QP	46.0	-27.0	1.37 V	196	29.8	-10.8
5	582.90	21.1 QP	46.0	-24.9	1.86 V	310	28.9	-7.8
6	782.72	24.7 QP	46.0	-21.3	1.25 V	112	28.9	-4.2

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

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	80.44	10.6 QP	40.0	-29.4	2.01 H	233	28.2	-17.6
2	224.00	14.0 QP	46.0	-32.0	1.82 H	233	30.1	-16.1
3	386.96	17.9 QP	46.0	-28.1	1.50 H	214	28.8	-10.9
4	525.67	20.9 QP	46.0	-25.1	1.00 H	27	29.8	-8.9
5	643.04	22.2 QP	46.0	-23.8	1.70 H	193	28.9	-6.7
6	784.66	24.8 QP	46.0	-21.2	1.44 H	27	29.0	-4.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.85	29.4 QP	40.0	-10.6	1.49 V	12	44.1	-14.7
2	151.25	19.5 QP	43.5	-24.0	1.33 V	67	32.6	-13.1
3	406.36	20.0 QP	46.0	-26.0	1.61 V	102	30.8	-10.8
4	491.72	19.7 QP	46.0	-26.3	1.08 V	228	29.1	-9.4
5	630.43	22.3 QP	46.0	-23.7	1.78 V	328	29.1	-6.8
6	800.18	25.8 QP	46.0	-20.2	1.40 V	123	30.0	-4.2

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

CHANNEL	TX Channel 7	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	42.61	15.2 QP	40.0	-24.8	1.60 H	41	28.9	-13.7
2	129.91	14.1 QP	43.5	-29.4	1.79 H	76	28.9	-14.8
3	224.00	14.0 QP	46.0	-32.0	1.00 H	233	30.1	-16.1
4	365.62	18.1 QP	46.0	-27.9	1.07 H	196	29.5	-11.4
5	511.12	20.2 QP	46.0	-25.8	2.00 H	351	29.2	-9.0
6	597.45	22.4 QP	46.0	-23.6	2.24 H	313	29.8	-7.4
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	53.28	14.8 QP	40.0	-25.2	1.62 V	93	28.2	-13.4
2	383.08	20.3 QP	46.0	-25.7	1.37 V	160	31.2	-10.9
3	531.49	20.3 QP	46.0	-25.7	1.17 V	19	29.3	-9.0
4	644.98	21.5 QP	46.0	-24.5	1.87 V	6	28.2	-6.7
5	826.37	25.1 QP	46.0	-20.9	1.59 V	29	28.7	-3.6
6	924.34	25.8 QP	46.0	-20.2	1.41 V	334	27.9	-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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

7.2 Conducted Emission Measurement

7.2.1 Limits of Conducted Emission Measurement

Same as 4.2.1.

7.2.2 Test Instruments

Same as 4.2.2.

7.2.3 Test Procedures

Same as 4.2.3.

7.2.4 Deviation from Test Standard

No deviation.

7.2.5 Test Setup

Same as 4.2.5.

7.2.6 EUT Operating Condition

Same as 4.1.6.

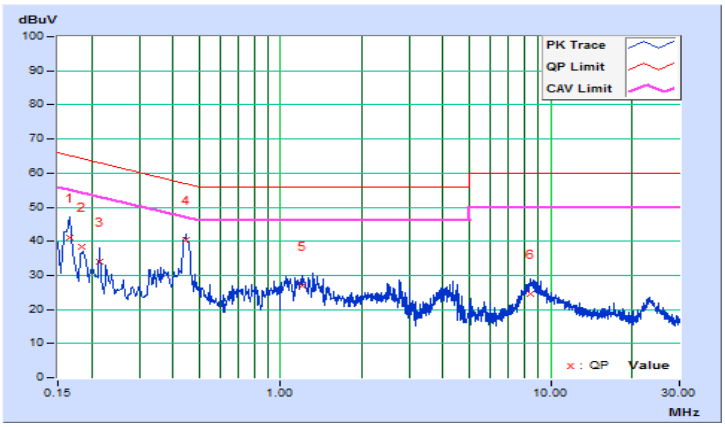
7.2.7 Test Results

Channel	TX Channel 0	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16535	10.10	30.86	18.71	40.96	28.81	65.19	55.19	-24.23	-26.38
2	0.18277	10.10	28.35	16.95	38.45	27.05	64.36	54.36	-25.91	-27.31
3	0.21294	10.10	23.94	12.74	34.04	22.84	63.09	53.09	-29.05	-30.25
4	0.44527	10.12	30.44	23.54	40.56	33.66	56.96	46.96	-16.40	-13.30
5	1.19906	10.15	16.63	10.61	26.78	20.76	56.00	46.00	-29.22	-25.24
6	8.39000	10.53	13.89	7.26	24.42	17.79	60.00	50.00	-35.58	-32.21

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.

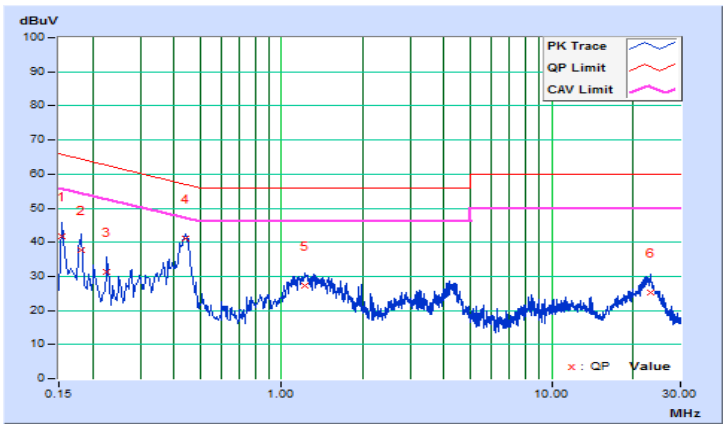


Channel	TX Channel 0	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.10	31.62	17.38	41.72	27.48	65.78	55.78	-24.06	-28.30
2	0.18037	10.10	27.73	14.94	37.83	25.04	64.47	54.47	-26.64	-29.43
3	0.22600	10.11	21.14	8.31	31.25	18.42	62.60	52.60	-31.35	-34.18
4	0.44177	10.12	31.06	23.82	41.18	33.94	57.03	47.03	-15.85	-13.09
5	1.21816	10.14	17.06	11.36	27.20	21.50	56.00	46.00	-28.80	-24.50
6	23.25000	10.99	14.24	7.72	25.23	18.71	60.00	50.00	-34.77	-31.29

Remarks:

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

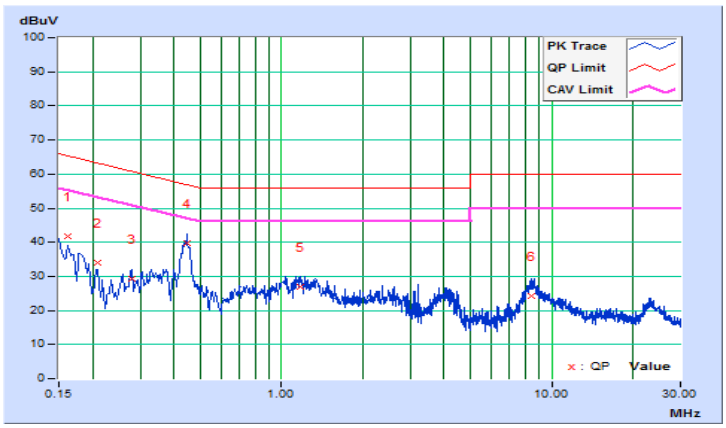


Channel	TX Channel 3	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	10.10	31.55	19.18	41.65	29.28	65.37	55.37	-23.72	-26.09
2	0.20740	10.10	23.98	13.12	34.08	23.22	63.31	53.31	-29.23	-30.09
3	0.27786	10.11	19.08	11.17	29.19	21.28	60.88	50.88	-31.69	-29.60
4	0.44600	10.12	29.52	23.37	39.64	33.49	56.95	46.95	-17.31	-13.46
5	1.18200	10.15	16.87	11.00	27.02	21.15	56.00	46.00	-28.98	-24.85
6	8.40600	10.53	13.87	7.06	24.40	17.59	60.00	50.00	-35.60	-32.41

Remarks:

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

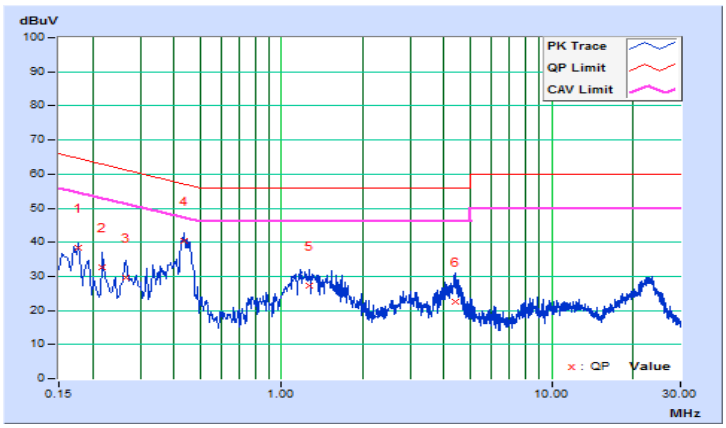


Channel	TX Channel 3	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17800	10.10	28.23	15.15	38.33	25.25	64.58	54.58	-26.25	-29.33
2	0.21800	10.11	22.54	9.57	32.65	19.68	62.89	52.89	-30.24	-33.21
3	0.26600	10.11	19.53	9.66	29.64	19.77	61.24	51.24	-31.60	-31.47
4	0.43800	10.12	30.38	22.71	40.50	32.83	57.10	47.10	-16.60	-14.27
5	1.26600	10.14	17.02	10.82	27.16	20.96	56.00	46.00	-28.84	-25.04
6	4.39000	10.28	12.40	3.90	22.68	14.18	56.00	46.00	-33.32	-31.82

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.

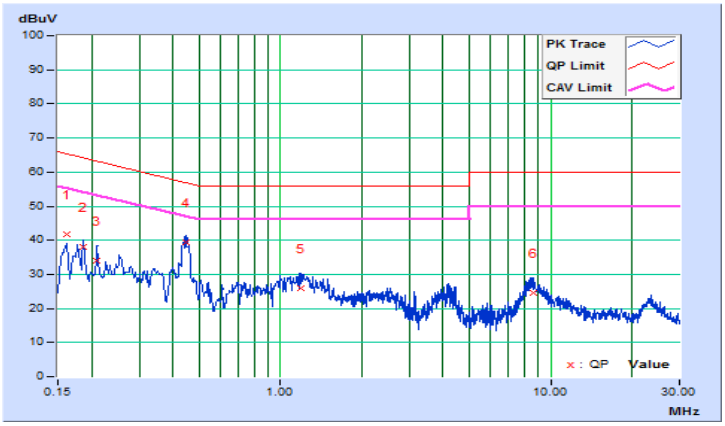


Channel	TX Channel 7	Phase	Line (L)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	10.10	31.55	19.09	41.65	29.19	65.37	55.37	-23.72	-26.18
2	0.18600	10.10	27.97	17.05	38.07	27.15	64.21	54.21	-26.14	-27.06
3	0.20960	10.10	24.02	13.08	34.12	23.18	63.22	53.22	-29.10	-30.04
4	0.44999	10.12	29.44	23.20	39.56	33.32	56.88	46.88	-17.32	-13.56
5	1.19400	10.15	15.94	9.03	26.09	19.18	56.00	46.00	-29.91	-26.82
6	8.59000	10.54	14.01	6.78	24.55	17.32	60.00	50.00	-35.45	-32.68

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.

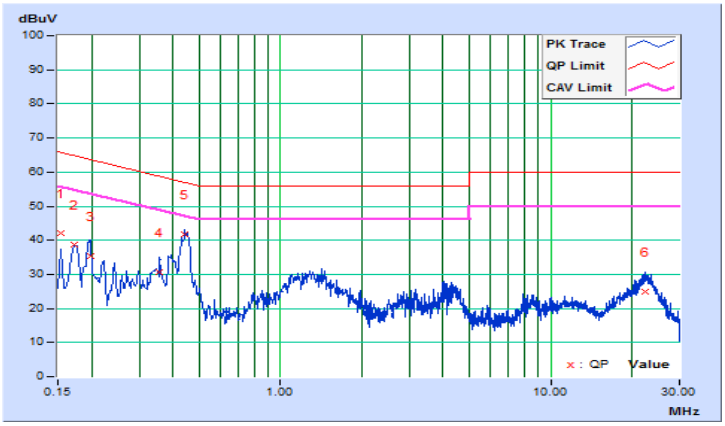


Channel	TX Channel 7	Phase	Neutral (N)
Detector Function	Quasi-Peak (QP) / Average (AV)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.10	31.92	17.44	42.02	27.54	65.78	55.78	-23.76	-28.24
2	0.17157	10.10	28.70	15.83	38.80	25.93	64.88	54.88	-26.08	-28.95
3	0.19728	10.10	25.32	12.68	35.42	22.78	63.72	53.72	-28.30	-30.94
4	0.35800	10.11	20.55	12.86	30.66	22.97	58.77	48.77	-28.11	-25.80
5	**0.44177**	**10.12**	**31.71**	**24.43**	**41.83**	**34.55**	**57.03**	**47.03**	**-15.20**	**-12.48**
6	22.41000	10.97	14.07	7.66	25.04	18.63	60.00	50.00	-34.96	-31.37

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.



7.3 Number of Hopping Frequency Used

7.3.1 Limits of Hopping Frequency Used Measurement

Same as 4.3.1.

7.3.2 Test Setup

Same as 4.3.2.

7.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

7.3.4 Test Procedure

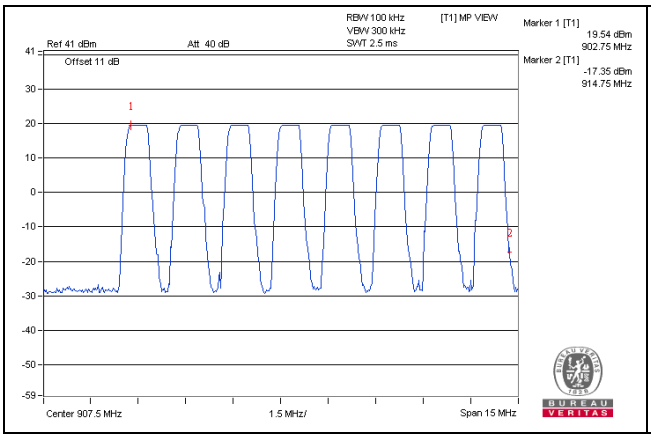
Same as 4.3.4.

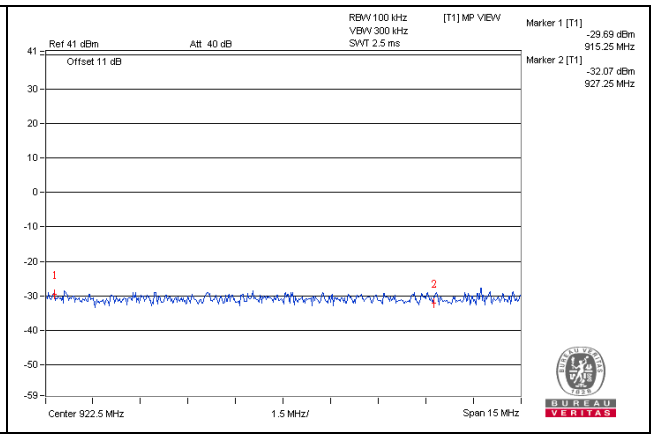
7.3.5 Deviation fromTest Standard

No deviation.

7.3.6 Test Results

There are 8 hopping frequencies in the hybrid mode.





7.4 Dwell Time on Each Channel

7.4.1 Limits of Dwell Time on Each Channel Measurement

Same as 4.4.1.

7.4.2 Test Setup

Same as 4.4.2.

7.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

7.4.4 Test Procedures

Same as 4.4.4.

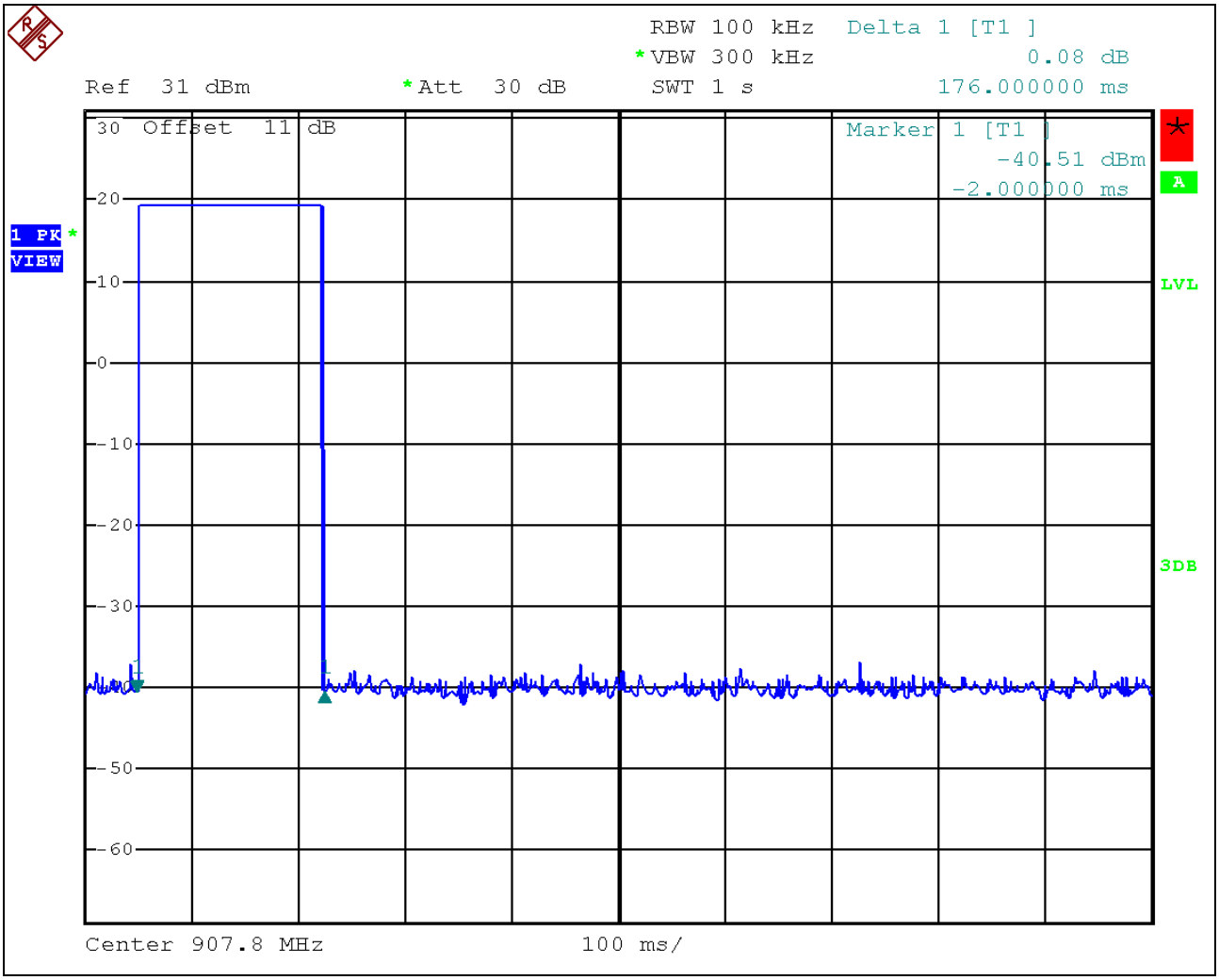
7.4.5 Deviation from Test Standard

No deviation.

7.4.6 Test Results

Number of transmission in a time period	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 time	176	176	400

Note: Test plots of the transmitting time slot are shown on following.



7.5 Conducted Output Power Measurement

7.5.1 Limits of Conducted Output Power Measurement

Same as 4.5.1.

7.5.2 Test Setup

Same as 4.5.2.

7.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

7.5.4 Test Procedure

Same as 4.5.4.

7.5.5 Deviation from Test Standard

No deviation.

7.5.6 EUT Operating Condition

Same as 4.5.6.

7.5.7 Test Results

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Pass / Fail
0	903.0	83.753	19.23	30	Pass
3	907.8	**83.946**	19.24	30	Pass
7	914.2	83.560	19.22	30	Pass

7.6 Power Spectral Density Measurement

7.6.1 Limits of Power Spectral Density Measurement

Same as 4.6.1.

7.6.2 Test Setup

Same as 4.6.2.

7.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

7.6.4 Test Procedure

Same as 4.6.4.

7.6.5 Deviation from Test Standard

No deviation.

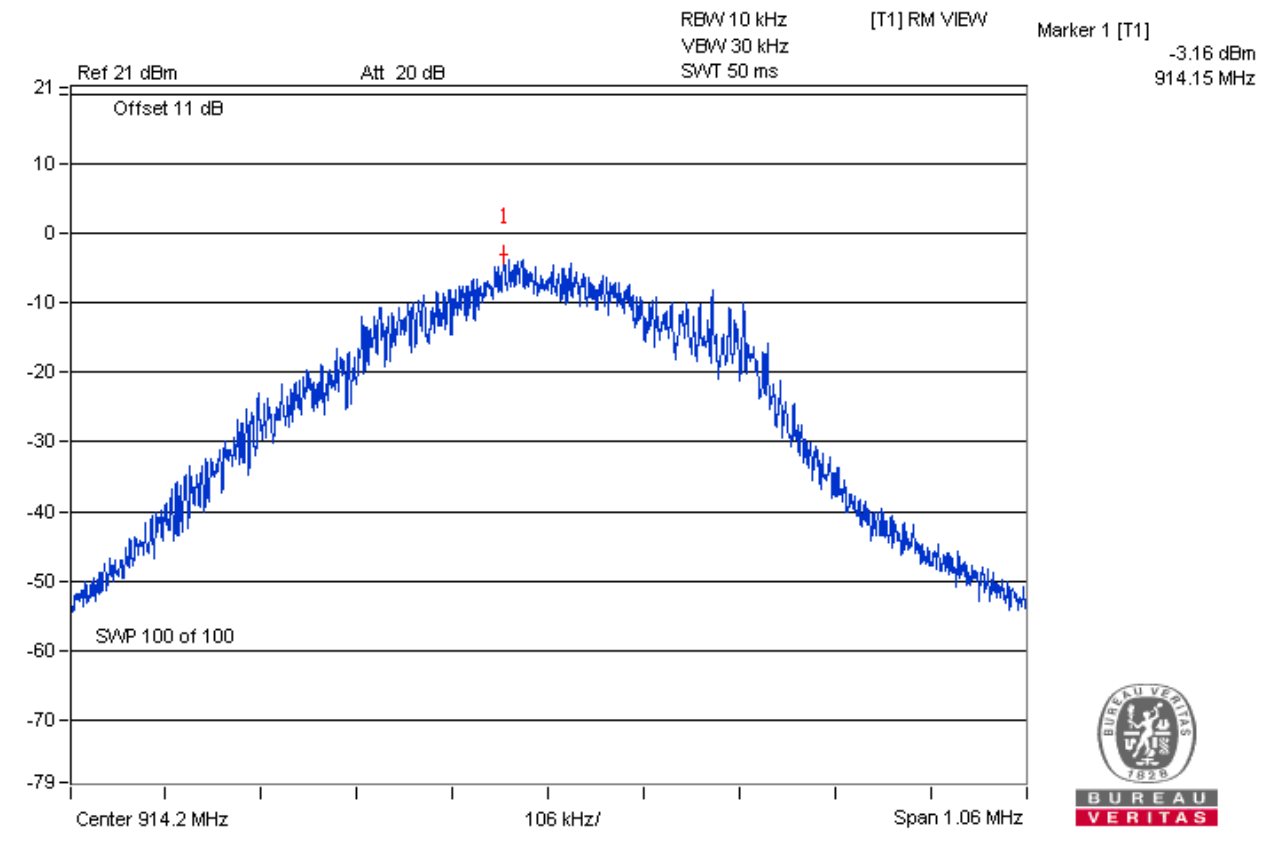
7.6.6 EUT Operating Condition

Same as 4.6.6.

7.6.7 Test Results

Channel	Freq. (MHz)	PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	903.0	-4.38	8	Pass
3	907.8	-4.09	8	Pass
7	914.2	-3.16	8	Pass

Spectrum Plot of Worst Value



7.7 Conducted Out of Band Emission Measurement

7.7.1 Limits of Conducted Out Of Band Emission Measurement

Same as 4.7.1.

7.7.2 Test Setup

Same as 4.7.2.

7.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

7.7.4 Test Procedure

Same as 4.7.4.

7.7.5 Deviation from Test Standard

No deviation.

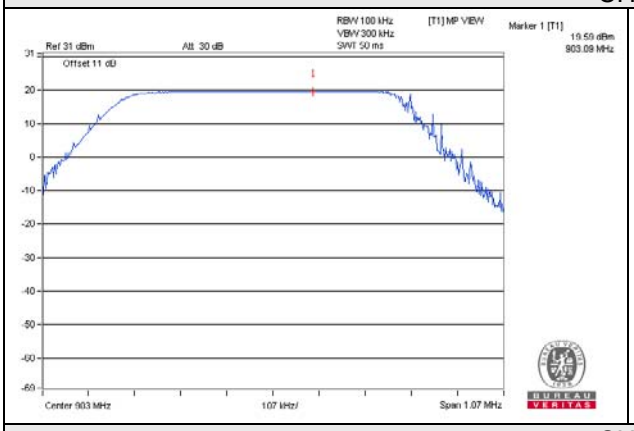
7.7.6 EUT Operating Condition

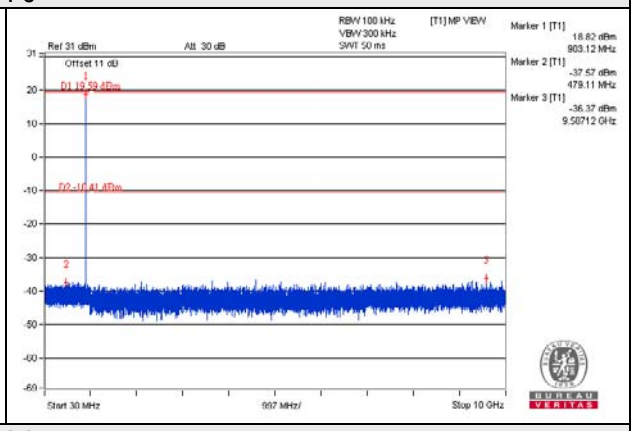
Same as 4.7.6.

7.7.7 Test Results

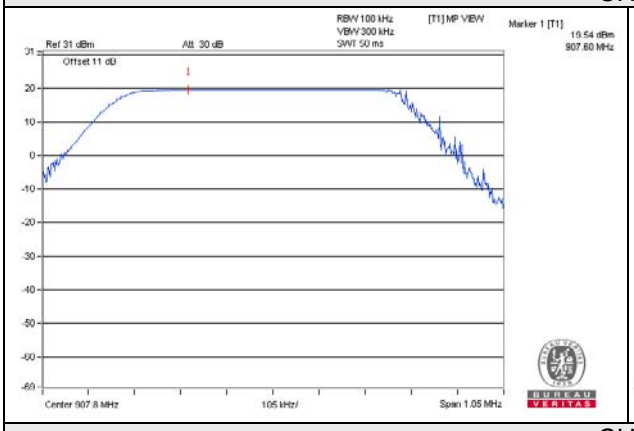
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

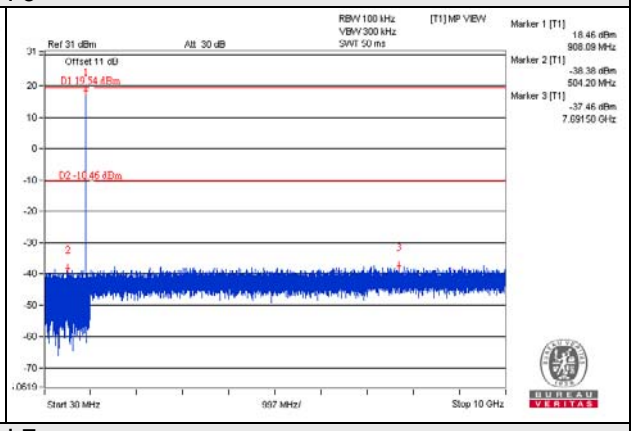
CH 0



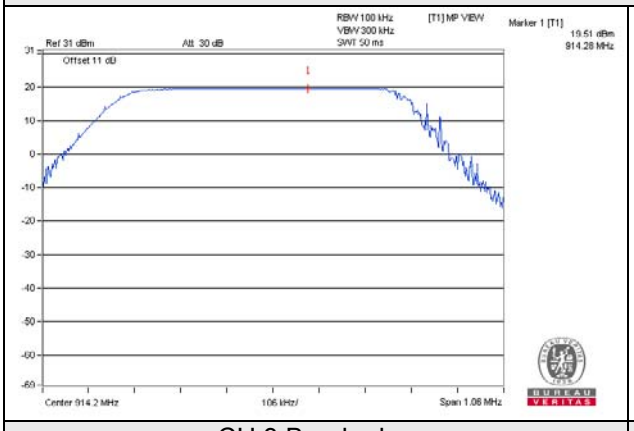


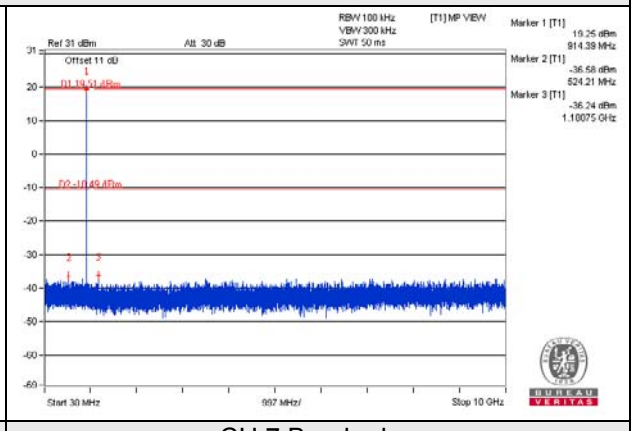
CH 3



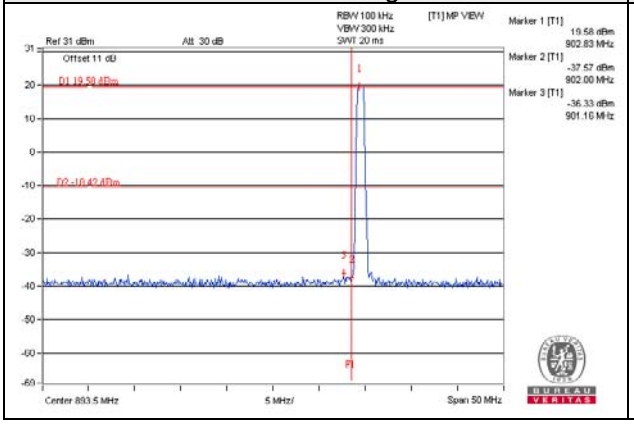


CH 7

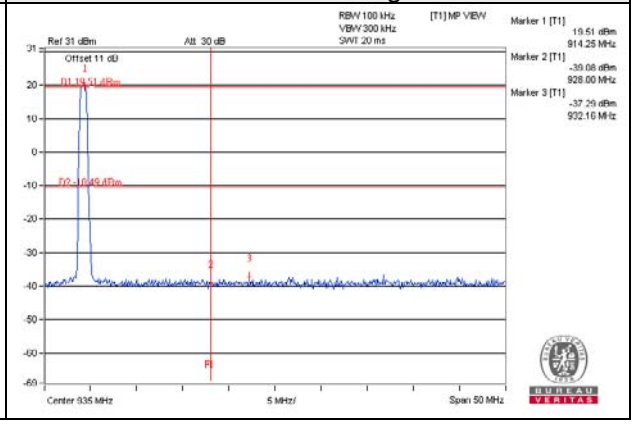




CH 3 Band edge



CH 7 Band edge



8 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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