

VARIANT FCC TEST REPORT

(PART 22)



Applicant:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States

Manufacturer or Supplier:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States
Product:	Mobile Computer
Brand Name:	Honeywell
Model Name:	CT45P-L1N-2
FCC ID:	HD5-CT45PL1N2
Date of tests:	Oct. 25, 2021 ~ Jan. 14, 2022

The tests have been carried out according to the requirements of the following standard:

- FCC PART 22, Subpart H** **FCC Part 2**
 ANSI/TIA/EIA-603-D **ANSI C63.26-2015**
 ANSI/TIA/EIA-603-E

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Jan. 14, 2022	 Date: Jan. 14, 2022

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	3
1 SUMMARY OF TEST RESULTS.....	4
1.1 MEASUREMENT UNCERTAINTY	5
1.2 TEST SITE AND INSTRUMENTS.....	6
2 GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT.....	7
2.2 CONFIGURATION OF SYSTEM UNDER TEST	10
2.3 DESCRIPTION OF SUPPORT UNITS	11
2.4 TEST ITEM AND TEST CONFIGURATION.....	11
2.5 EUT OPERATING CONDITIONS.....	13
2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS	13
2 TEST TYPES AND RESULTS.....	14
3.1 OUTPUT POWER MEASUREMENT	14
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT	14
3.1.2 TEST PROCEDURES	14
3.1.3 TEST SETUP	15
3.1.4 TEST RESULTS	15
3.2 RADIATED EMISSION MEASUREMENT.....	18
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	18
3.2.2 TEST PROCEDURES	18
3.2.3 DEVIATION FROM TEST STANDARD	18
3.2.4 TEST SETUP	19
3.2.5 TEST RESULTS	20
3 PHOTOGRAPHS OF THE TEST CONFIGURATION	28
4 INFORMATION ON THE TESTING LABORATORIES.....	29
5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	30



BUREAU
VERITAS

Test Report No.: W7L-211129W002RF15

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21080006RF15	Original release	Sep. 01, 2021
W7L-P21110008RF15	Based on the original report W7L-P21080006RF15 add the band 41C, changing components	Nov. 12, 2021
W7L-211129W002RF15	Based on the original report W7L-P21110008RF15 Changing components	Jan. 14, 2022

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
2.1046 22.913 (a)	Effective Radiated Power	Compliance (See Note 1)
2.1055 22.355	Frequency Stability	(See Note 2)
2.1049 22.917 (b)	Occupied Bandwidth	(See Note 2)
22.913 (d)	Peak to average ratio*	(See Note 2)
22.917	Band Edge Measurements	(See Note 2)
2.1051 22.917	Conducted Spurious Emissions	(See Note 2)
2.1053 22.917	Radiated Spurious Emissions	Compliance (See Note 1)

* Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.

NOTE:

1. Per the change notice provide by manufactory, the difference is changing components, all the change no effect any RF parameter, Therefore only verify the power and radiated emission worse case. The report only show the verify test data.
2. Please refer to original report W7L-P21110008RF15



1.1 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	UNCERTAINTY
Maximum Peak Output Power	±2.06dB
Radiated emissions (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB

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



1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Jun. 03,21	Jun. 02,22
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168728	Apr. 02,21	Apr. 01,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 25,21	Feb. 24,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V 7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
Power Meter	Anritsu	ML2495A	1506002	Apr. 07,21	Apr. 06,22
Power Sensor	Anritsu	MA2411B	1339352	May. 07,21	May. 06,22
Temperature Chamber	ESPEC	SH-242	93000855	Jun. 02,21	Jun. 01,22
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Mar. 05,21	Mar. 04,22
Power Divider	MCLI/USA	PS2-15	24880	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mobile Computer	
BRAND NAME	Honeywell	
MODEL NAME	CT45P-L1N-2	
NOMINAL VOLTAGE	3.85Vdc (Lithium-ion cell, battery)	
MODULATION TYPE	GSM/GPRS/EDGE	GMSK, 8PSK
	WCDMA	BPSK,QPSK
	LTE	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	GSM/GPRS/EDGE	824.2MHz ~ 848.8MHz
	WCDMA	826.4MHz ~ 846.6MHz
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE Band 5 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE Band 5 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE Band 5 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE Band 26 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE Band 26 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE Band 26 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE Band 26 (Channel Bandwidth: 15MHz)	831.5MHz ~ 841.5MHz
	MAX. ERP POWER	GSM
EDGE		211.35mW
WCDMA		114.02mW
LTE Band 5 (Channel Bandwidth: 1.4MHz)		118.85mW
LTE Band 5 (Channel Bandwidth: 3MHz)		117.76mW
LTE Band 5 (Channel Bandwidth: 5MHz)		118.03mW
LTE Band 5 (Channel Bandwidth: 10MHz)		119.40mW



**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

MAX. ERP POWER	LTE Band 26 (Channel Bandwidth: 1.4MHz)	268.53mW	
	LTE Band 26 (Channel Bandwidth: 3MHz)	266.69mW	
	LTE Band 26 (Channel Bandwidth: 5MHz)	269.15mW	
	LTE Band 26 (Channel Bandwidth: 10MHz)	269.77mW	
	LTE Band 26 (Channel Bandwidth: 15MHz)	272.90mW	
EMISSION DESIGNATOR GOGN	GSM	240KGXW	
	EDGE	240KG7W	
	WCDMA	4M15F9W	
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	QPSK: 1M09G7D	
		16QAM: 1M09W7D	
		64QAM: 1M09W7D	
	LTE Band 5 (Channel Bandwidth: 3MHz)	QPSK: 2M70G7D	
		16QAM: 2M68W7D	
		64QAM: 2M69W7D	
	LTE Band 5 (Channel Bandwidth: 5MHz)	QPSK: 4M49G7D	
		16QAM: 4M48W7D	
		64QAM: 4M58W7D	
	LTE Band 5 (Channel Bandwidth: 10MHz)	QPSK: 8M95G7D	
		16QAM: 8M95W7D	
		64QAM: 8M95W7D	
	LTE Band 26 (Channel Bandwidth: 1.4MHz)	QPSK: 1M08G7D	
		16QAM: 1M09W7D	
		64QAM: 1M09W7D	
	LTE Band 26 (Channel Bandwidth: 3MHz)	QPSK: 2M70G7D	
		16QAM: 2M69W7D	
		64QAM: 2M69W7D	
LTE Band 26 (Channel Bandwidth: 5MHz)	QPSK: 4M47G7D		
	16QAM: 4M48W7D		
	64QAM: 4M49W7D		
LTE Band 26 (Channel Bandwidth: 10MHz)	QPSK: 8M95G7D		
	16QAM: 8M94W7D		
	64QAM: 8M94W7D		
LTE Band 26 (Channel Bandwidth: 15MHz)	QPSK: 13M4G7D		
	16QAM: 13M4W7D		
	64QAM: 13M5W7D		
ANTENNA TYPE	PIFA Antenna with -0.56dBi gain for GSM850/ WCDMA5/LTE band 5 PIFA Antenna with 2.67dBi gain for LTE band 26		
HW VERSION	V1.0		



SW VERSION	OS.11.002-HON.11.002
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB CUP: unshielded without ferrite, 1.25 meter Earphone cable: unshielded without ferrite, 1.27 meter
EXTREME TEMPERATURE	-10-55 °C
EXTREME VOLTAGE	3.4V- 4.4V

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. This product includes the following three SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case, check worst case Radiated emission:

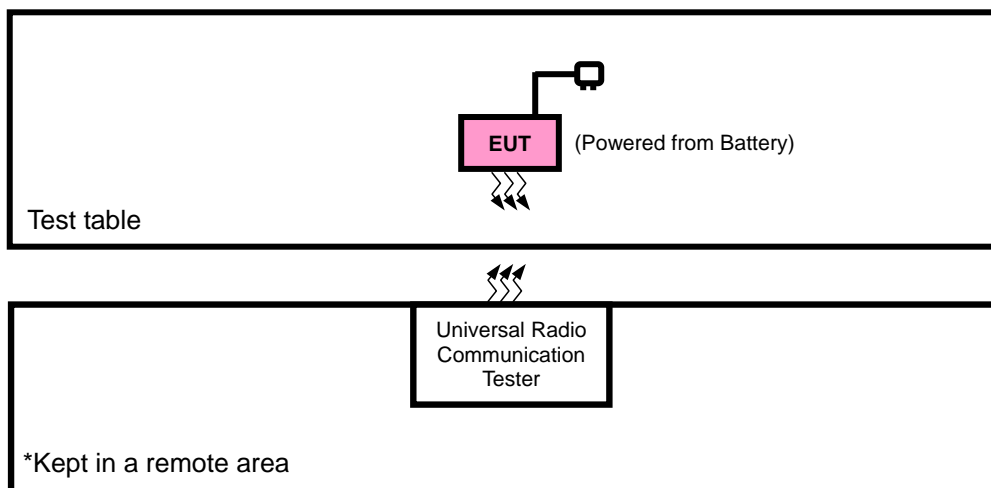
SAMPLE	EUT CONFIGURATION INFORMATION
1	SKU ID:CT45-L1N-37D120G ,Assembled Scanner Imager: 7-S0703
2	SKU ID:CT45-L1N-38D120G ,Assembled Scanner Imager: 8 - N6803/S0803
3	SKU ID: CT45-L1N-37D220G , Assembled with Scanner: 7-S0703 for China Only with Android non-GMS

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery	Honeywell	CT50-BTSC	Capacity : 3.85vdc 4020mAh
AC Adapter	HONOR	ADS-12B-06 05010E	I/P:100-240Vac, 0.3A O/P: 5Vdc, 2A
USB CUP	Honeywell	CT40-SN	Shielded, 1.25meter
Earphone	VIVO	N/A	Shielded, 1.27meter
LCD Panel	CASIL	CTM10801920T01	5.0" FHD(1928*1080)

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION





2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	Kikusui/JP	PMX18-5A	0000001	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case in ERP and radiated emission was found when positioned on X-plane for GSM /EDGE /LTE. Following channel(s) was (were) selected for the final test as listed below:

DESCRIPTION
EUT + DC Source with GSM WCDMA & LTE link

GSM MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	128 to 251	128, 189, 251	GSM,EDGE
RADIATED EMISSION	128 to 251	128, 189, 251	GSM,EDGE

WCDMA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4182, 4233	WCDMA



LTE BAND 5 MODE

TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset

LTE BAND 26 MODE

TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	23deg. C, 70%RH	DC 3.85V By Battery	Jace Hu
RADIATED EMISSION	23deg. C, 70%RH	DC 3.85V By Battery	Jace Hu



Test Report No.: W7L-211129W002RF15

2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

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



2 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile / Portable station are limited to 7 watts e.r.p.

3.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_{T} = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_{C} = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

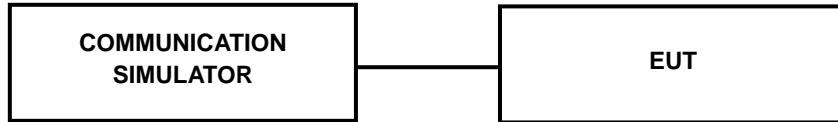
The EUT was set up for the maximum power with WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

Retested Data(For reference only,it's lower than the original report)

CONDUCTED OUTPUT POWER (dBm)

Band	GSM850			Max. Tune-up Power
	Channel	128	189	
Frequency	824.2	836.4	848.8	
GSM (GMSK, 1Tx-slot)	31.01	31.03	31.19	32.0
GPRS (GMSK, 1Tx-slot)	30.95	30.98	31.17	32.0
GPRS (GMSK, 2Tx-slot)	29.96	29.91	29.98	30.5
GPRS (GMSK, 3Tx-slot)	27.73	27.64	27.88	28.0
GPRS (GMSK, 4Tx-slot)	25.03	25.10	25.28	25.5
EDGE (8PSK, 1Tx-slot)	25.58	25.63	25.88	26.5
EDGE (8PSK, 2Tx-slot)	23.78	23.99	24.23	25.0
EDGE (8PSK, 3Tx-slot)	21.74	21.91	22.15	23.0
EDGE (8PSK, 4Tx-slot)	19.51	19.71	19.82	21.0

Band	WCDMA V			Max. Tune-up Power
	Channel	4132	4182	
Frequency	826.4	836.4	846.6	
RMC 12.2K	22.72	23.20	23.26	24.0
HSDPA Subtest-1	21.76	22.13	22.29	23.0
HSDPA Subtest-2	21.68	22.07	22.29	23.0
HSDPA Subtest-3	21.19	21.69	21.86	22.5
HSDPA Subtest-4	21.19	21.65	21.74	22.5
DC-HSDPA Subtest-1	21.77	22.14	22.36	23.0
DC-HSDPA Subtest-2	21.78	22.17	22.35	23.0
DC-HSDPA Subtest-3	21.21	21.68	21.87	22.5
DC-HSDPA Subtest-4	21.24	21.70	21.78	22.5
HSUPA Subtest-1	21.72	22.20	22.34	23.0
HSUPA Subtest-2	19.72	22.10	20.32	21.0
HSUPA Subtest-3	20.18	21.66	20.86	22.0
HSUPA Subtest-4	19.22	21.67	19.75	21.0
HSUPA Subtest-5	21.79	22.21	22.38	23.0



**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

LTE Band 5

Band/BW	Modulation	RB Size	RB Offset	Low CH 20450	Mid CH 20525	High CH 20600	MPR
				Frequency 829 MHz	Frequency 836.5 MHz	Frequency 844 MHz	
5/ 10	QPSK	1	0	23.38	23.13	23.16	0
		1	24	23.02	22.79	22.75	0
		1	49	23.44	23.21	23.14	0
		25	0	22.24	21.99	21.99	1
		25	12	22.24	21.97	21.95	1
		25	25	22.17	21.93	21.95	1
		50	0	22.31	22.06	22.06	1
	16QAM	1	0	22.67	22.40	22.38	1
		1	24	22.33	22.10	22.00	1
		1	49	22.53	22.28	22.26	1
		25	0	21.19	20.92	20.92	2
		25	12	21.20	20.96	20.94	2
		25	25	21.26	20.98	21.00	2
		50	0	21.38	21.15	21.15	2
	64QAM	1	0	21.51	21.33	21.26	2
		1	24	21.36	21.16	21.15	2
		1	49	21.58	21.37	21.30	2
		25	0	20.15	19.94	19.94	3
		25	12	20.23	20.00	19.93	3
		25	25	20.26	20.06	19.97	3
		50	0	20.34	20.11	20.10	3



LTE BAND 26

Band/BW	Modulation	RB Size	RB Offset	Low CH 26865	Mid CH 26915	High CH 26965	MPR
				Frequency 831.5 MHz	Frequency 836.5 MHz	Frequency 848.3 MHz	
26/ 15	QPSK	1	0	23.32	23.51	23.65	0
		1	37	23.12	23.23	23.38	0
		1	74	23.51	23.72	23.76	0
		36	0	22.51	22.63	22.79	1
		36	19	22.27	22.35	22.47	1
		36	39	22.16	22.30	22.50	1
		75	0	22.45	22.59	22.65	1
	16QAM	1	0	22.56	22.68	22.80	1
		1	37	22.49	22.63	22.69	1
		1	74	22.79	22.87	22.91	1
		36	0	21.55	21.66	21.84	2
		36	19	21.33	21.43	21.60	2
		36	39	21.16	21.32	21.45	2
		75	0	21.41	21.52	21.71	2
	64QAM	1	0	21.55	21.81	21.85	2
		1	37	21.52	21.69	21.84	2
		1	74	21.62	21.76	21.83	2
		36	0	20.58	20.75	20.93	3
		36	19	20.61	20.77	20.76	3
		36	39	20.57	20.74	20.79	3
		75	0	20.64	20.76	20.91	3



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

3.2.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}$.

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

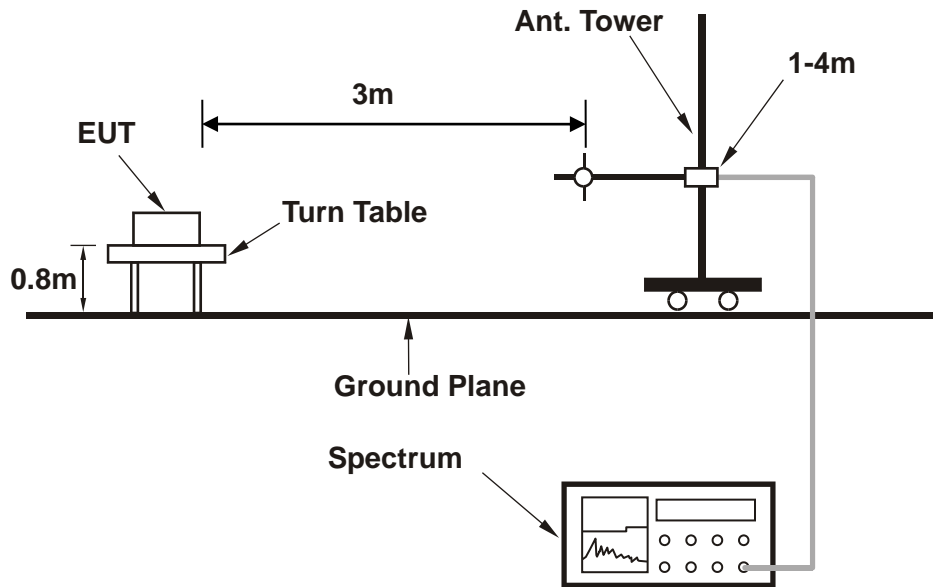
3.2.3 DEVIATION FROM TEST STANDARD

No deviation

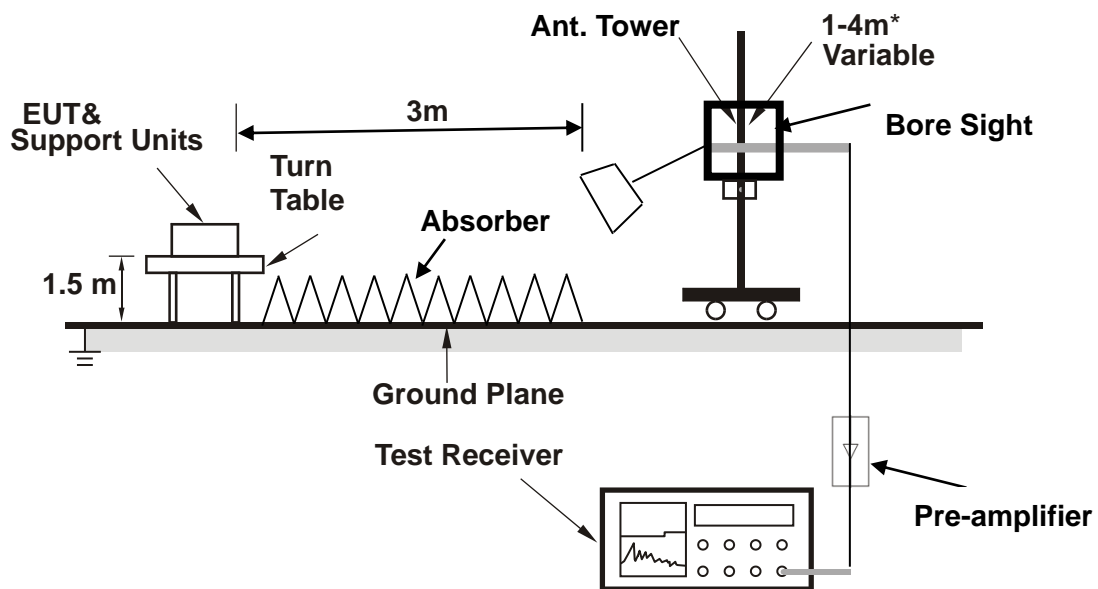


3.2.4 TEST SETUP

< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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



**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

3.2.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

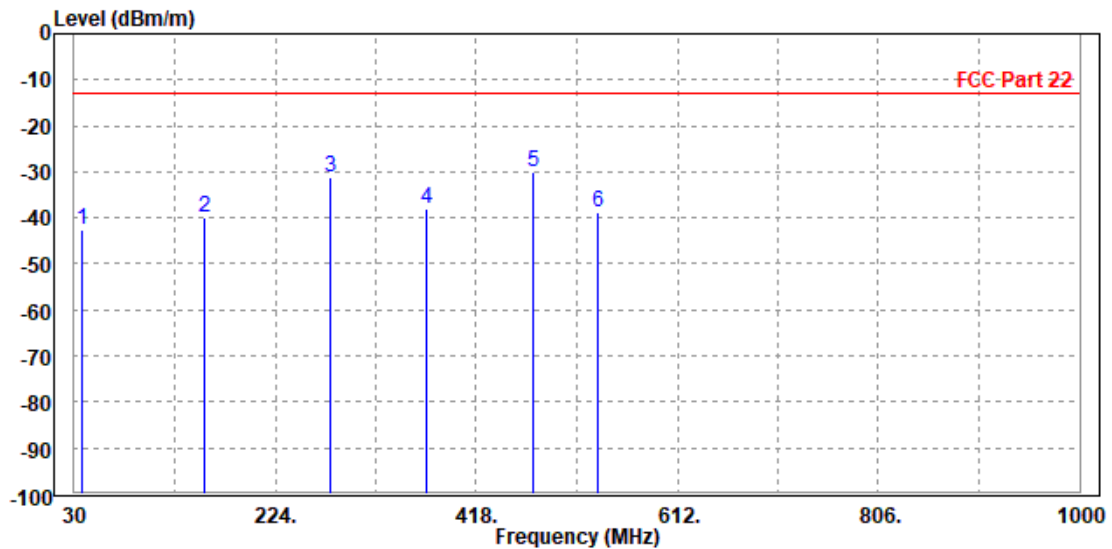
30 MHz – 1GHz data:

GSM 850

CHANNEL BANDWIDTH: 128 ~ 251

MODE	TX channel 128	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	37.560	-42.59	-58.57	-13.00	-29.59	15.98	Peak	Horizontal
2	155.630	-39.77	-50.10	-13.00	-26.77	10.33	Peak	Horizontal
3	277.350	-31.09	-44.73	-13.00	-18.09	13.64	Peak	Horizontal
4	370.470	-38.20	-54.24	-13.00	-25.20	16.04	Peak	Horizontal
5 PP	472.320	-30.16	-48.36	-13.00	-17.16	18.20	Peak	Horizontal
6	535.370	-38.86	-58.27	-13.00	-25.86	19.41	Peak	Horizontal



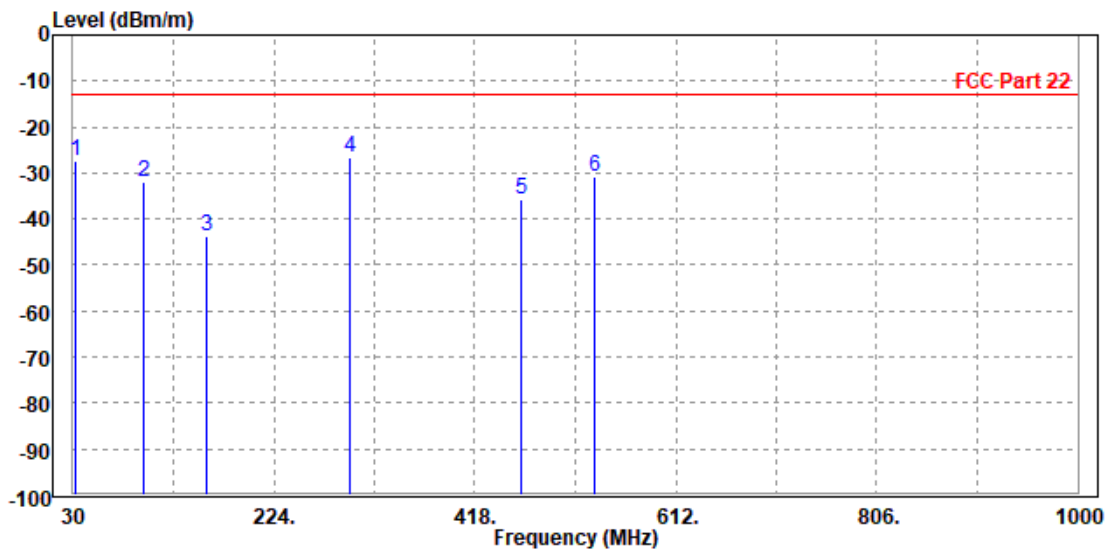


**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

MODE	TX channel 128	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	32.910	-27.43	-46.35	-13.00	-14.43	18.92	Peak	Vertical
2	98.580	-32.06	-40.47	-13.00	-19.06	8.41	Peak	Vertical
3	159.010	-43.63	-54.98	-13.00	-30.63	11.35	Peak	Vertical
4 PP	297.720	-26.48	-41.43	-13.00	-13.48	14.95	Peak	Vertical
5	462.620	-35.91	-54.30	-13.00	-22.91	18.39	Peak	Vertical
6	533.430	-30.93	-50.63	-13.00	-17.93	19.70	Peak	Vertical





**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

ABOVE 1GHz DATA

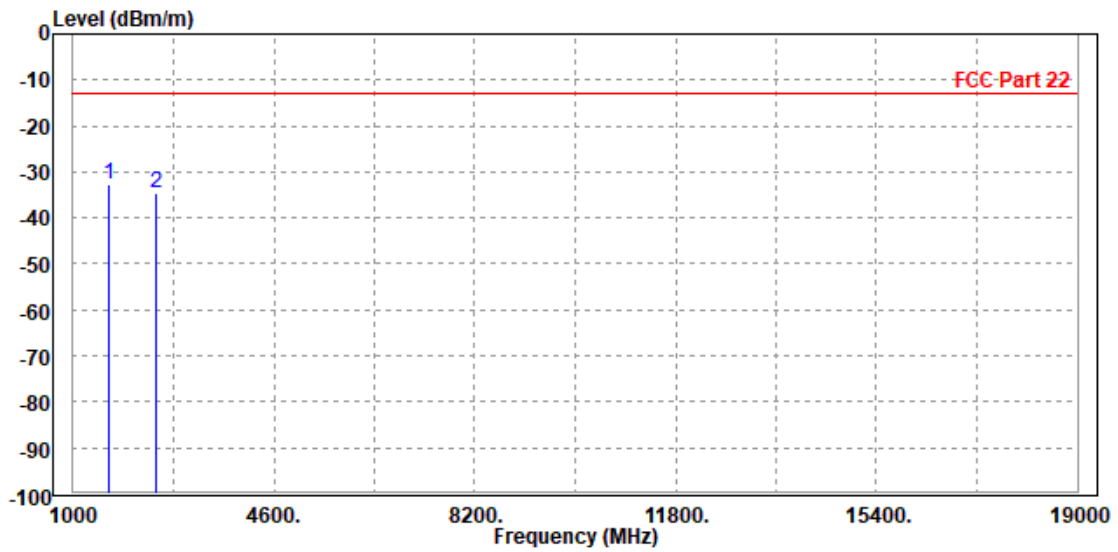
Note: For higher frequency, the emission is too low to be detected.

GSM 850

CH 128:

MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1648.400	-32.61	-35.87	-13.00	-19.61	3.26	Peak	Horizontal
2	2476.000	-34.64	-42.67	-13.00	-21.64	8.03	Peak	Horizontal



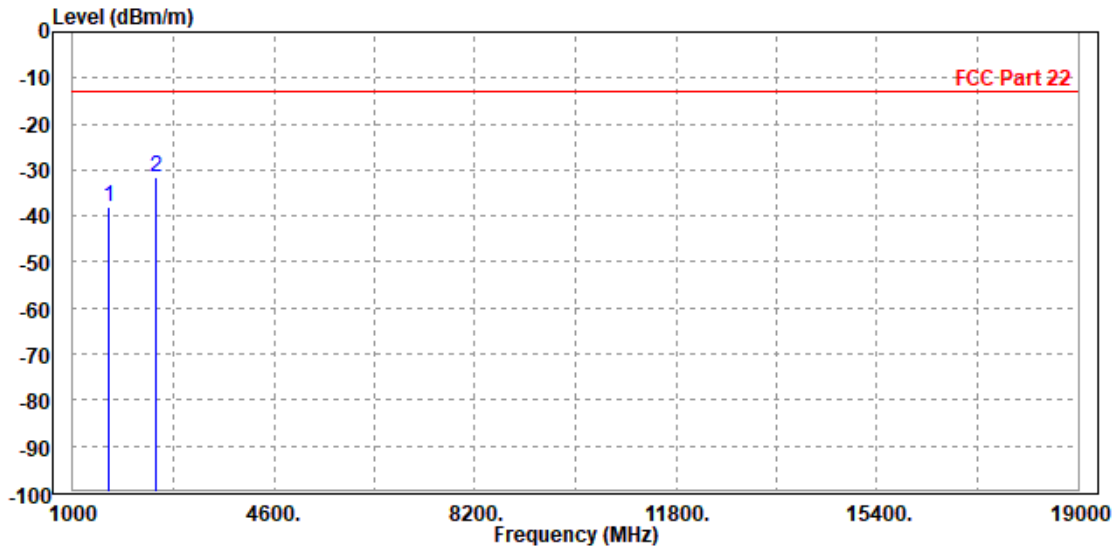


**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1648.000	-37.87	-41.25	-13.00	-24.87	3.38	Peak	Vertical
2 PP	2476.000	-31.57	-38.61	-13.00	-18.57	7.04	Peak	Vertical





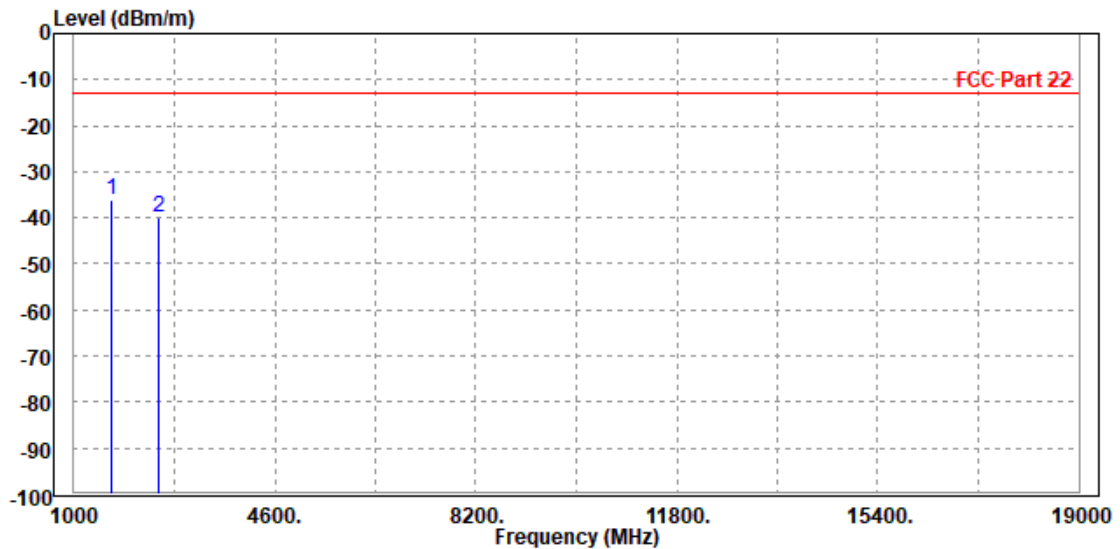
**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

CH 189:

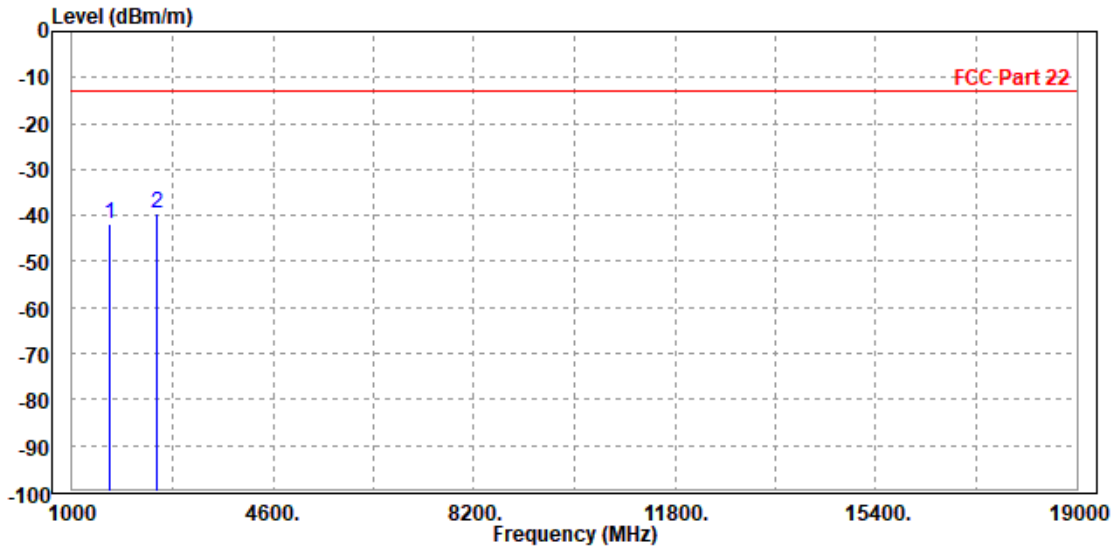
MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1672.800	-35.99	-39.54	-13.00	-22.99	3.55	Peak	Horizontal
2	2512.000	-39.88	-47.94	-13.00	-26.88	8.06	Peak	Horizontal



MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1666.000	-41.70	-45.24	-13.00	-28.70	3.54	Peak	Vertical
2	PP 2509.200	-39.49	-46.59	-13.00	-26.49	7.10	Peak	Vertical





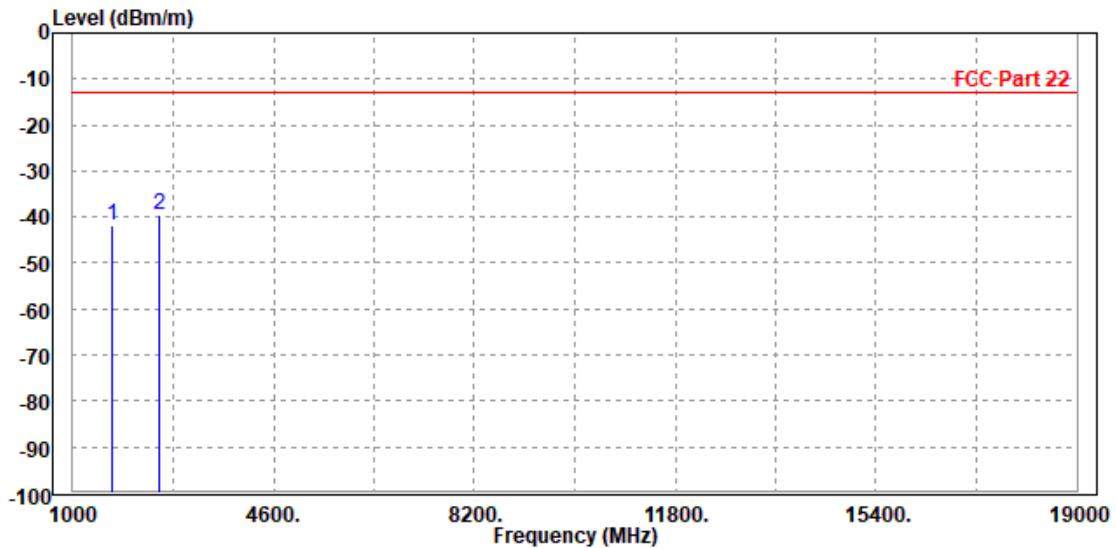
**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

CH 251:

MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1702.000	-41.78	-45.69	-13.00	-28.78	3.91	Peak	Horizontal
2 PP	2546.400	-39.46	-47.57	-13.00	-26.46	8.11	Peak	Horizontal



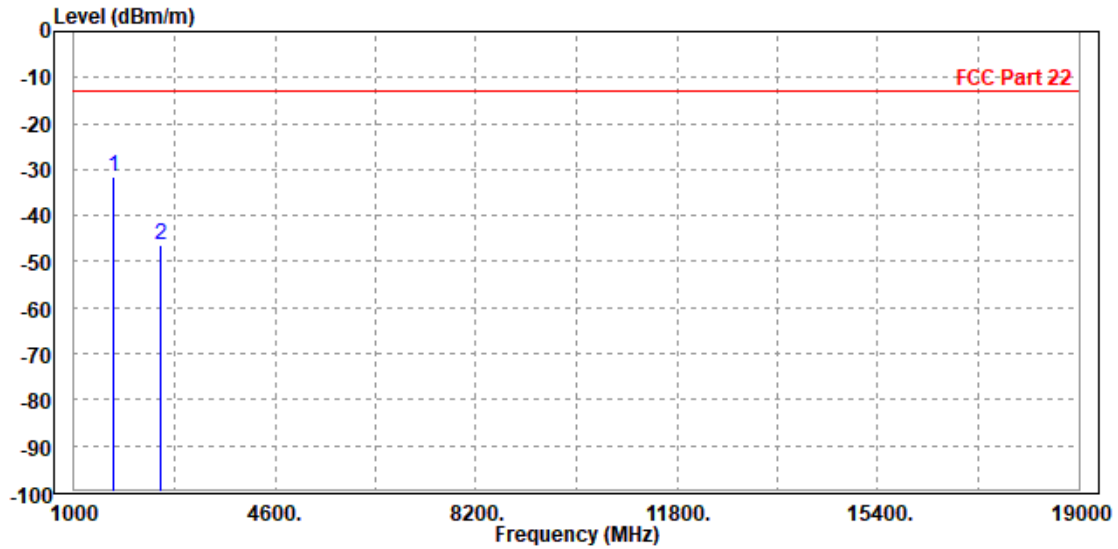


**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1702.000	-31.39	-35.26	-13.00	-18.39	3.87	Peak	Vertical
2	2546.400	-46.45	-53.67	-13.00	-33.45	7.22	Peak	Vertical





Test Report No.: W7L-211129W002RF15

3 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: W7L-211129W002RF15

4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

Shenzhen EMC/RF Lab:

Tel: +86-755-88696566

Fax: +86-755-88696577

Email: customerservice.sw@cn.bureauveritas.com

Web Site: www.adt.com.tw

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



**BUREAU
VERITAS**

Test Report No.: W7L-211129W002RF15

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

No any modifications are made to the EUT by the lab during the test.

---END---