



FCC/IC RF Test Report

APPLICANT : Sony Mobile Communications Inc.
EQUIPMENT : Smart phone
BRAND NAME : SONY
TYPE NAME : PM-0863-BV
FCC ID : PY7-PM0863
STANDARD : 47 CFR Part 2, 27(M)
IC RSS-199 issue 2
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

This is a partial report which is included the conducted power and radiated test items. The product was received on Dec. 31, 2014 and testing was completed on Feb. 05, 2015. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 and the testing has shown the tested sample to be in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



Testing Laboratory
1190

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.4	§2.1046	RSS-199 (4.4)	Conducted Output Power	Reporting Only	PASS	-
4.4	§2.1053 §27.53(m)(4)	RSS-199 (4.5)	Radiated Spurious Emission	$< 55 + 10 \log_{10}(P[\text{Watts}])$	PASS	Under limit 11.06 dB at 7590.000 MHz



1 General Description

1.1 Applicant

Sony Mobile Communications Inc.
Nya Vattentorget, 22188 Lund, Sweden

1.2 Manufacturer

Arima Communications Corp.
6F,No.866,Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

1.3 Product Feature of Equipment Under Test

The Equipment Under Test (hereafter called: EUT) is smart phone supporting, GSM / WCDMA / LTE, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, Bluetooth with FM Receiver, GPS, and NFC features, and below is details of information.

Product Feature	
Equipment	Smart phone
Brand Name	SONY
Type Name	PM-0863-BV
FCC ID	PY7-PM0863
GSM Operating Band(s)	GSM 850/900/1800/1900MHz
GPRS / EGPRS Multi Slot Class	GPRS Class 12, EGPRS Class 12
WCDMA Operating Band(s)	FDD Band I / II / V / VIII
WCDMA Rel. Version	Rel. 8
LTE Operating Band(s)	FDD Band I / III / VII / VIII / XXVIII TDD Band XL
LTE Rel. Version	Rel. 8
Wi-Fi Specification	802.11a/b/g/n (HT20/HT40)
Bluetooth Version	v3.0 + EDR / v4.0 - LE
NFC Specification	ISO14443A / ISO14443B / Felica
Power Supply	Battery / AC Adapter / Car Charger

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz
Rx Frequency	LTE Band 7 : 2622.5MHz ~ 2687.5 MHz
Bandwidth	LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	LTE Band 7 : 22.04 dBm
Antenna Gain	LTE Band 7 : -7.40 dBi
Type of Modulation	QPSK / 16QAM

EUT Information List				
IMEI	HW Version	SW Version	S/N	Performed Test Item
IMEI : 004402453861654	A	27.1.A.1.11	RT4C13D11150	Conducted Measurement Radiated Emission

Accessory List	
AC Adapter	Model No. : EP800
	Type No. : AC-0030-US
	S/N : 3113W46622783
Battery	Model No. : Ram
Earphone	Model No. : MH410c
	Type No. : AG-1103
	S/N : 1411204C00BC7D0
USB Cable	Model No. : EC450
	Type No. : AI-0700
	S/N : 143912D8330504A

Note:

1. Above EUT list and accessory list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test.
3. For other wireless features of this EUT, test report will be issued separately.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.



1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton Site No.		IC Registration No.
	TH02-HY	03CH07-HY	4086B-1

1.7 Applicable Standards

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

- ♦ 47 CFR Part 2, 27(M)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r02
- ♦ IC RSS-199 Issue 2
- ♦ IC RSS-Gen Issue 4
- ♦ NOTICE 2012-DRS0126

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.



2 Test Configuration of Equipment Under Test

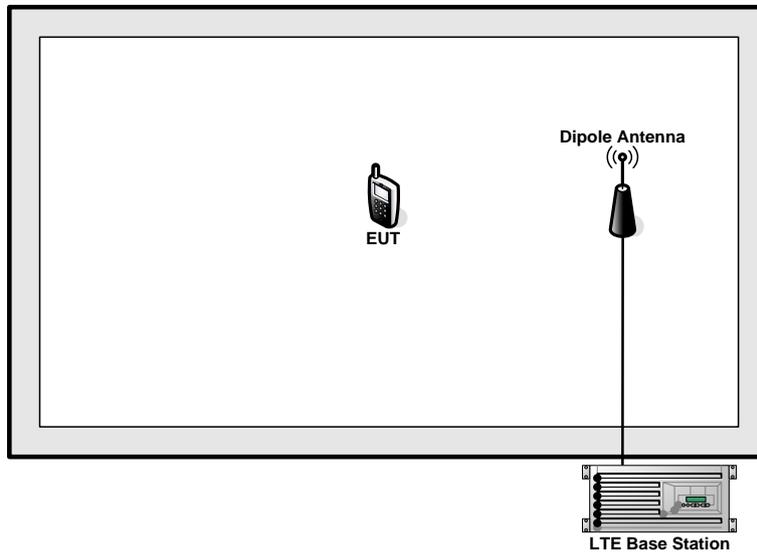
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	7	-	-	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	7	-	-	v	v	v	v	v		v			v	v	v
Note	<ol style="list-style-type: none"> The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 														

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

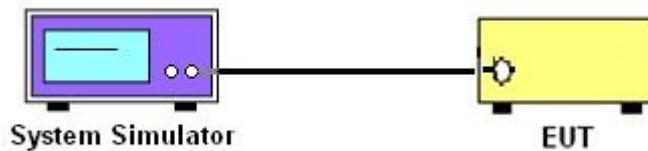
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power

3.4.1 Description of the Conducted Output Power Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.4.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

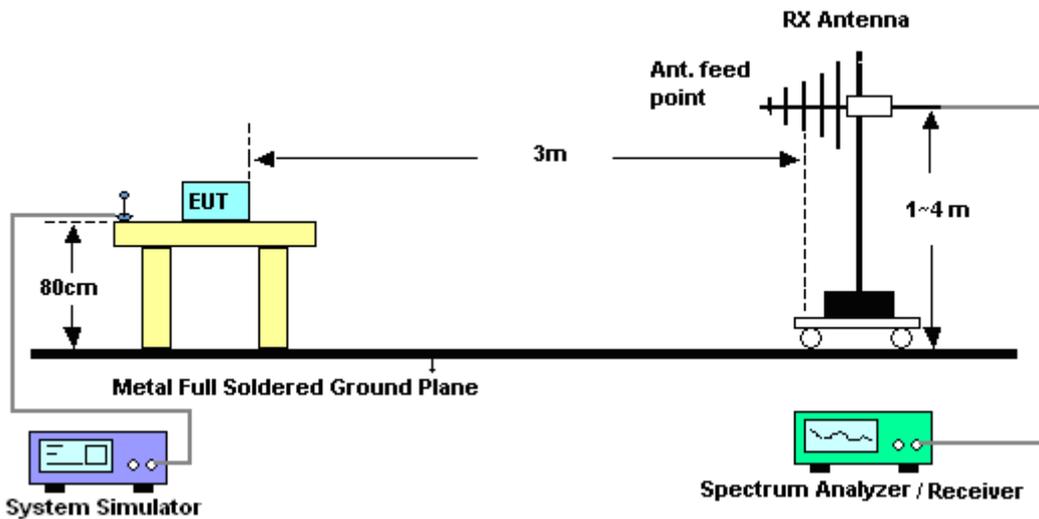
4 Radiated Test Items

4.1 Measuring Instruments

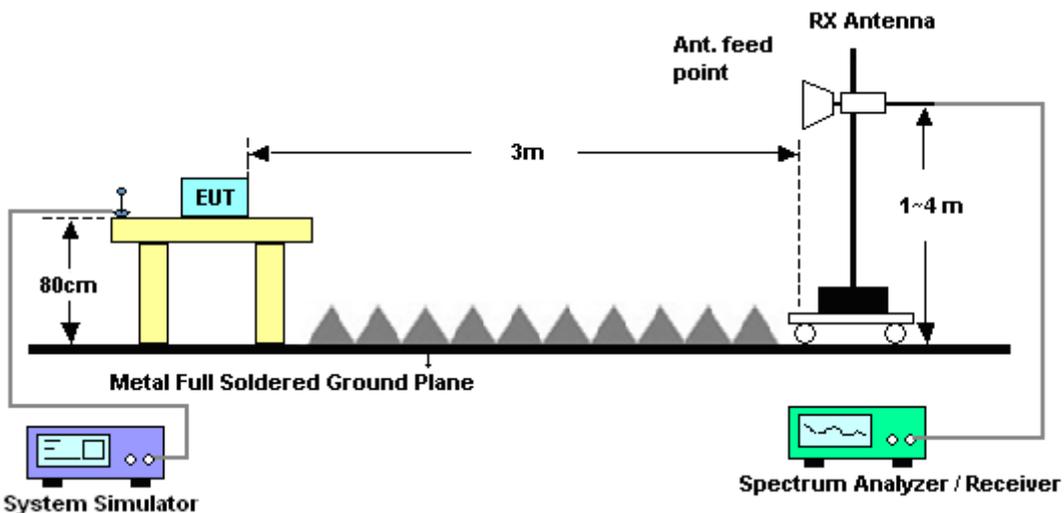
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.



4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)
= P(W)- [55 + 10log(P)] (dB)
= [30 + 10log(P)] (dBm) - [55 + 10log(P)] (dB)
= -25dBm.

12. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
13. ERP (dBm) = EIRP - 2.15



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201026480	MIMO FDD	Jan. 08, 2015	Feb. 05, 2015	Jan. 07, 2016	Conducted (TH02-HY)
Hygrometer	Testo	608-H1	34897199	N/A	May. 06, 2014	Feb. 05, 2015	May. 05, 2015	Conducted (TH02-HY)
RF cable	WOKEN	S05	S05-130708-038	N/A	Jan. 21, 2015	Feb. 05, 2015	Jan. 20, 2016	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Jan. 23, 2015	Feb. 09, 2015	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Sep. 27, 2014	Jan. 23, 2015	Sep. 26, 2015	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz-18GHz	Aug. 19, 2014	Jan. 23, 2015	Aug. 18, 2015	Radiation (03CH07-HY)
Horn Antenna	SCHWARZBEC	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 03, 2014	Jan. 23, 2015	Nov. 02, 2015	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz	Mar. 17, 2014	Jan. 23, 2015	Mar. 16, 2015	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Oct. 21, 2014	Jan. 23, 2015	Oct. 20, 2015	Radiation (03CH07-HY)
Preamplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 09, 2014	Jan. 23, 2015	Jun. 08, 2015	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Jan. 23, 2015	N/A	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Jan. 23, 2015	N/A	Radiation (03CH07-HY)
Controller	ChainTek	Chaintek 3000		Control Turn table	N/A	Jan. 23, 2015	N/A	Radiation (03CH07-HY)
Controller	Max-Full	MF7802	MF780208368	Control Ant Mast	N/A	Jan. 23, 2015	N/A	Radiation (03CH07-HY)
Hygrometer	Testo	608-H1	34897197	N/A	May 06, 2014	Jan. 23, 2015	May 05, 2015	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY8420952	1GHz~40GHz	Dec. 04, 2014	Jan. 23, 2015	Dec. 03, 2015	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY8420952	9KHz~1GHz	Dec. 04, 2014	Jan. 23, 2015	Dec. 03, 2015	Radiation (03CH07-HY)
Filter	Wainwright Instruments	WLKS1200-8SS	SN3	1.2GHz LPF	Oct. 01, 2014	Jan. 23, 2015	Sep. 30, 2015	Radiation (03CH07-HY)
Notch Filter	Wainwright	WRCT2500/2570-10/40-	SN1 R	LTE Band7	Oct. 01, 2014	Jan. 23, 2015	Sep. 30, 2015	Radiation (03CH07-HY)
Filter	Microwave Circuits	H3G018G1	SN477220	3GHz HPF	Oct. 01, 2014	Jan. 23, 2015	Sep. 30, 2015	Radiation (03CH07-HY)
Test Software	Audix	E3	Version 6.2009-08-2	N/A	N/A	Jan. 23, 2015	N/A	Radiation (03CH07-HY)

Note: Test equipment calibration is traceable to the procedure of ISO17025.



6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	20.78	20.86	20.80
5	1	12		20.76	20.85	20.79
5	1	24		20.66	20.84	20.74
5	12	0		19.82	19.95	19.86
5	12	6		19.82	19.94	19.87
5	12	11		19.81	19.95	19.90
5	25	0		19.76	19.90	19.84
5	1	0	16-QAM	20.08	20.18	20.14
5	1	12		20.07	20.17	20.11
5	1	24		19.99	20.17	20.08
5	12	0		18.86	18.96	18.87
5	12	6		18.85	18.97	18.90
5	12	11		18.85	18.97	18.93
5	25	0		18.77	18.92	18.86
10	1	0	QPSK	20.75	20.89	20.81
10	1	24		20.73	20.84	20.76
10	1	49		20.65	20.88	20.61
10	25	0		19.75	19.88	19.65
10	25	12		19.66	19.87	19.79
10	25	24		19.69	19.92	19.81
10	50	0		19.76	19.83	19.78
10	1	0	16-QAM	20.06	20.22	20.16
10	1	24		20.03	20.21	20.02
10	1	49		19.98	20.19	19.99
10	25	0		18.77	18.91	18.76
10	25	12		18.76	18.83	18.76
10	25	24		18.71	18.82	18.86
10	50	0		18.77	18.78	18.78



LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	21.93	21.95	22.03
15	1	37		21.85	21.94	21.87
15	1	74		21.89	21.75	21.85
15	36	0		21.00	21.01	20.88
15	36	18		20.97	21.00	20.97
15	36	37		20.96	21.02	21.01
15	75	0		20.95	21.01	20.99
15	1	0	16-QAM	21.19	21.30	21.32
15	1	37		21.11	21.23	21.10
15	1	74		21.14	21.26	21.09
15	36	0		19.99	20.02	19.91
15	36	18		19.97	20.03	19.95
15	36	37		19.95	20.03	20.01
15	75	0		19.95	20.01	19.98
20	1	0	QPSK	22.00	21.96	22.04
20	1	49		21.90	21.92	21.87
20	1	99		21.84	21.89	21.86
20	50	0		20.92	20.95	20.93
20	50	24		20.86	20.95	20.92
20	50	49		20.54	20.97	20.99
20	100	0		20.44	20.96	20.94
20	1	0	16-QAM	20.97	21.32	21.30
20	1	49		20.85	21.22	21.16
20	1	99		20.73	21.21	21.11
20	50	0		19.89	19.96	19.91
20	50	24		19.86	19.96	19.91
20	50	49		19.89	19.98	19.97
20	100	0		19.86	19.96	19.91



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

LTE Band 7 / 10MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	4998	-54.31	-25	-29.31	-77.25	-61.67	2.34	9.70	H
	7500	-42.87	-25	-17.87	-69.19	-52.24	2.43	11.80	H
	10002	-47.39	-25	-22.39	-74.89	-56.89	2.70	12.20	H
	4998	-51.42	-25	-26.42	-75.32	-58.78	2.34	9.70	V
	7500	-39.85	-25	-14.85	-67.92	-49.22	2.43	11.80	V
	10002	-49.71	-25	-24.71	-79.8	-59.21	2.70	12.20	V
Middle	5058	-53.13	-25	-28.13	-76.04	-60.46	2.37	9.70	H
	7590	-42.20	-25	-17.20	-69.31	-51.65	2.40	11.85	H
	10122	-47.87	-25	-22.87	-75.83	-57.42	2.70	12.25	H
	5058	-52.30	-25	-27.30	-76.22	-59.63	2.37	9.70	V
	7590	-36.06	-25	-11.06	-64.89	-45.51	2.40	11.85	V
	10122	-50.10	-25	-25.10	-80.65	-59.65	2.70	12.25	V
Highest	5118	-54.87	-25	-29.87	-77.65	-62.17	2.40	9.70	H
	7680	-42.19	-25	-17.19	-69.34	-51.73	2.37	11.91	H
	10242	-49.29	-25	-24.29	-77.66	-58.89	2.69	12.30	H
	5118	-54.41	-25	-29.41	-78.33	-61.71	2.40	9.70	V
	7680	-40.82	-25	-15.82	-69.52	-50.36	2.37	11.91	V
	10242	-47.63	-25	-22.63	-78.38	-57.23	2.69	12.30	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.